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AD-704 500

CIVIL DEFENSE SYSTEMS:

SHELTERS

Volume I of II Volumes

A DDC BIBLIOGRAPHY

February 1960 - August 1969

DDC-TAS-70-36-I

April 1970

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AD-704 500

CIVIL DEFENSE SYSTEMS: SHELTERS

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DEFENSE DOCUMENTATION CENTER
CAMERON STATION
ALEXANDRIA, VIRGINIA 22314

F O R E W O R D

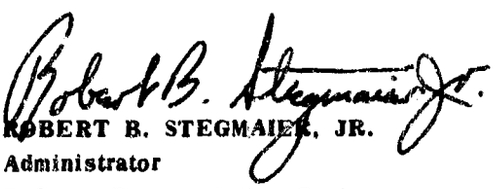
This unclassified and unlimited bibliography is Volume I of a two-volume set on *Civil Defense Systems: Shelters*, in a series of scheduled bibliographies on the Civil Defense Systems. References were selected from the Defense Documentation Center's collection and cover the period January 1960 to December 1969.

Corporate Author-Monitoring Agency, Subject, and Contract indexes are included.

Volume II, AD-868 250, contains 97 references with limited distribution.

BY ORDER OF THE DIRECTOR, DEFENSE SUPPLY AGENCY

OFFICIAL



ROBERT B. STEGMAIER, JR.
Administrator
Defense Documentation Center

C O N T E N T S

The following is a selective list of titles of bibliographies. (DDC bibliographies are announced regularly in the *Technical Abstract Bulletin* (TAB), page ii and in TAB *Indexes*, page ii.)

ATMOSPHERIC TURBULENCE

CIVIL DEFENSE SYSTEMS: COMMUNICATIONS

COST EFFECTIVENESS

FIRE EXTINGUISHERS

FOREST FIRES AND RELATED EQUIPMENT

HEAD-UP DISPLAY SYSTEMS

MICROFICHE, MICROFILM AND RELATED EQUIPMENT

MICROMINIATURIZATION(ELECTRONICS)

RING WINGS

SEARCHLIGHTS

SOIL MECHANICS

WEATHER CONTROL

WEATHER FORECASTING

WEATHER SATELLITES

WHITE PHOSPHORUS

XENON LAMPS

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-258 246
NAVAL CIVIL ENGINEERING LAB PORT HUENEME CALIF
DOSE ATTENUATION FACTORS FOR CONCRETE SLAB SHIELDS COVERED WITH FALLOUT AS A FUNCTION OF TIME AFTER FISSION (U)
JUN 61 30P DONOVAN,L. K. ICHILTON,A. B. I
REPT. NO. NCEL-TR-137
PROJ: Y-F011-05-324

UNCLASSIFIED REPORT

DESCRIPTORS: *CONCRETE, *DOSE RATE, *RADIOACTIVE FALLOUT, *SHELTERS, ATTENUATION, CIVIL DEFENSE SYSTEMS, COUNTERMEASURES, DOSAGE, FISSION, GAMMA RAYS, NUCLEAR EXPLOSIONS, NUCLEAR WARFARE, RADIOACTIVE DECAY, RADIOLOGICAL DOSAGE, RADIOLOGICAL WARFARE, SHIELDING, THICKNESS, TIME, UNDERGROUND STRUCTURES (U)

A STUDY WAS MADE TO INVESTIGATE THE DOSE ATTENUATION OF FALLOUT GAMMA RADIATION BY VARIOUS THICKNESSES OF CONCRETE ROOFS OF BURIED FALLOUT SHELTERS AS A FUNCTION OF TIME AFTER A NUCLEAR DETONATION. A SPECTRUM OF ENERGIES IS USED FOR THE FALLOUT SOURCE RATHER THAN A SINGLE AVERAGE ENERGY AS HAS BEEN DONE IN PREVIOUS STUDIES. DOSE ATTENUATION FACTORS ARE DERIVED AND PRESENTED AS A FUNCTION OF THE ABOVE PARAMETERS. THE OFFICE OF CIVIL AND DEFENSE MOBILIZATION RECOMMENDS A TWO-WEEK SHELTER-STAY TIME IN THE EVENT OF A NUCLEAR ATTACK; THEREFORE, ALSO PRESENTED IS AN AVERAGE DOSE ATTENUATION FACTOR FOR ANY FOURTEEN-DAY STAY TIME AS A FUNCTION OF TIME OF ARRIVAL OF THE FALLOUT OR OF SHELTER-ENTRY TIME FOR VARIOUS ROOF THICKNESSES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-270 119
CALIFORNIA UNIV BERKELEY INST OF ENGINEERING RESEARCH
SURVEYS OF FALLOUT SHELTER. A COMPARISON BETWEEN AERIAL PHOTOGRAPHIC AND DOCUMENTARY METHODS (U)
FEB 60 1V KLEINECKE,D.C.;
REPT. NO. S2 126
CONTRACT: CD SR58 40

UNCLASSIFIED REPORT

DESCRIPTORS: *SHELTERS, *UNDERGROUND STRUCTURES, AERIAL PHOTOGRAPHY, ANALYSIS, CIVIL DEFENSE SYSTEMS, EFFECTIVENESS, MAPPING, MAPS, RADIOACTIVE FALLOUT, SHIELDING (U)

IN 1959 A LARGE PART OF CONTRA COSTA COUNTY, CALIFORNIA WAS SURVEYED FOR FALLOUT SHELTER AREAS. THIS SURVEY WAS BASED ON AN EXAMINATION OF THE TAX ASSESSOR'S RECORDS OF EXISTING BUILDINGS. A PORTION OF THIS AREA WAS ALSO SURVEYED INDEPENDENTLY BY A METHOD BASED ON AERIAL PHOTOGRAPHY. A STATISTICAL COMPARISON OF THE RESULTS OF THESE TWO SURVEYS INDICATES THAT THE AERIAL PHOTOGRAPHIC METHOD WAS MORE EFFICIENT THAN THE DOCUMENTARY METHOD IN LOCATING POTENTIAL SHELTER SPACE IN BUILDINGS OF HEAVY CONSTRUCTION. THIS RESULT, HOWEVER, IS PROBABLY NOT OPERATIONALLY SIGNIFICANT. THERE IS REASON TO BELIEVE THAT A COMBINATION OF THESE TWO SURVEY METHODS COULD BE DEVISED WHICH WOULD BE OPERATIONALLY PREFERABLE TO EITHER METHOD. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-476 392
TECHNICAL OPERATIONS INC BURLINGTON MASS
SHELTER FROM FALLOUT (U)
APR 61 IV CALLAHAN,E.D.;ROSENBLUM,L.;
COOMBE,J.R.;
REPT. NO. B 60 30
CONTRACT: CDM SRD 33

UNCLASSIFIED REPORT

DESCRIPTORS: *CIVIL DEFENSE SYSTEMS, *RADIOACTIVE FALLOUT, *SHELTERS, *UNDERGROUND STRUCTURES, BOATS, CONSTRUCTION, COSTS, DESIGN, DOSE RATE, LAKES, MATERIALS, NUCLEAR EXPLOSION DAMAGE, NUCLEAR EXPLOSIONS, NUCLEAR WARFARE, OCEANS, RADIOLOGICAL WARFARE, SHIPS (U)

A SURVEY IS PRESENTED OF THE EXISTING FALLOUT SHELTER POTENTIAL IN BASEMENTS AND MINES IN THE UNITED STATES, AND IN BOATS ON BODIES OF WATER OF SUFFICIENT SIZE AND DEPTH. ALSO PRESENTED IS AN ANALYSIS OF THE DESIGN, CONSTRUCTION, AND HABITABILITY OF A MINIMUM-TYPE, IMPROVISED HOME BASEMENT FAMILY FALLOUT SHELTER, AND THE SHELTER POTENTIAL IN AN ACTUAL SUBURBAN COMMUNITY IN THE NORTHEAST. THE SURVEY SHOWS THAT ABOUT 60% OF THE POPULATION IN THE U. S. WOULD HAVE ACCESS TO BASEMENT SHELTER, WITH THE FIGURES RANGING FROM BETTER THAN 80% IN OCDM REGIONS 1, 2, AND 4 TO LESS THAN 20% IN REGIONS 3, 5, AND 7. MINE SHELTER COULD BE AN IMPORTANT SHELTER RESOURCE FOR TWO TO FOUR MILLION PEOPLE IN SOME 16 STATES. A FAMILY-SIZE, SAND-BAG FALLOUT SHELTER CAN BE READILY CONSTRUCTED IN THE BASEMENT CORNER BY ONE PERSON FOR A MATERIALS' COST OF ABOUT $60. THE SHELTER, WHICH OFFERS A PROTECTION FACTOR OF 100 AGAINST OUTSIDE RADIATION LEVELS, CAN BE ASSEMBLED IN AN HOUR IF THE MATERIALS ARE SUITABLY STORED ALONG THE BASEMENT WALLS, AND REALISTIC EXCURSION SCHEDULES APPEAR POSSIBLE AFTER TWO DAYS EVEN IN THE HEAVIEST FALLOUT AREAS. A SURVEY OF PUBLIC AND PRIVATE BUILDINGS IN A TYPICAL NORTHEASTERN SUBURBAN CITY OF 25,000 POPULATION INDICATED THAT THE BASEMENTS OF SCHOOLS, CHURCHES, AND OTHER LARGE BUILDINGS DO NOT OFFER SIGNIFICANTLY BETTER PROTECTION THAN THAT OF THE AVERAGE HOME BASEMENT (I.E., ABOUT A FACTOR OF 40). (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-286 933
TEXAS UNIV AUSTIN
ATTITUDES AND KNOWLEDGE CONCERNING FALLOUT SHELTERS IN AUSTIN,TEXAS (U)
JAN 62 IV MOORE,HARRY ESTILL;
CONTRACT: CDM SR62 2

UNCLASSIFIED REPORT

DESCRIPTORS: *CIVIL DEFENSE SYSTEMS, *SHELTERS, ATTITUDES, BEHAVIOR, DISASTERS, GROUP DYNAMICS, LEADERSHIP, PUBLIC HEALTH, SOCIOMETRICS, STATISTICAL DATA (U)

D-286 933?NJ ***AN ANALYSIS OF DATA CONCERNING PERSONNEL ATTITUDES AND KNOWLEDGE OF FALLOUT SHELTERS IN THE EVENT OF A NUCLEAR ATTACK. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-288 228
NAVAL RADIOLOGICAL DEFENSE LAB SAN FRANCISCO CALIF
THE FAMILY OCCUPANCY TEST, 4-6 NOVEMBER 1960 (U)
AUG 62 IV STROPE,W.E.;IETTER,M.S.;
REPT. NO. TR578

UNCLASSIFIED REPORT

DESCRIPTORS: •SHELTERS, •UNDERGROUND STRUCTURES, CHILDREN, CIVIL DEFENSE SYSTEMS, DIET, NOISE, RECREATION, WOMEN (U)

THE USNRDL EXPERIMENTAL SHELTER AT CAMP PARKS, CALIFORNIA, WAS OCCUPIED FOR A PERIOD OF 48 HOURS BY 99 MEN, WOMEN, AND CHILDREN. AGES OF THE PARTICIPANTS RANGED FRO ABOUT 3 MONTHS TO 68 YEARS. FAMILY SIZE RANGED FROM SINGLE PERSONS TO A FAMILY OF SEVEN. ALL ASPECTS OF THE SHELTER ENVIRONMENT AS WELL AS THE ACTIONS AND RESPONSE OF THE SHELTEREES WERE MONITORED. CHILDREN OF ALL AGES APPEARED TO ADAPT WELL TO SHELTER CONDITIONS, BUT THE IMPORTANCE OF CAREFUL PREPARATION, ORGANIZATION, AND CONTROL OF ACTIVITIES WAS DEMONSTRATED. T HIS IS A PRELIMINARY REPORT MADE IN ADVANCE OF COMPLETE ANALYSIS OF THE DATA. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-288 914
NAVAL RADIOLOGICAL DEFENSE LAB SAN FRANCISCO CALIF
DESIGN MODIFICATIONS AND 1962 COST ANALYSIS FOR A STANDARDIZED SERIES OF FALLOUT SHELTERS (U)
SEP 62 IV PORTEOUS,LEWIS G.;
REPT. NO. TR582

UNCLASSIFIED REPORT

DESCRIPTORS: *SHELTERS, BLAST, CIVIL DEFENSE SYSTEMS, CONSTRUCTION, COSTS, DESIGN, DOSIMETERS, ELECTRIC POWER PRODUCTION, FILTERS (FLUID), FUEL TANKS, PERISCOPES, RADIO EQUIPMENT, SANITARY ENGINEERING, SHIELDING, STANDARDIZATION, STORAGE TANKS, VENTILATION, WATER SUPPLIES (U)

MAJOR EMPHASIS IS ON RECENT DESIGN MODIFICATIONS AND 1962 COST ESTIMATES FOR THE PERSONNEL FALLOUT SHELTER DESCRIBED IN USNRDL-TR-306, SPECIFICATION AND COSTS OF A STANDARDIZED SERIE OF FALLOUT SHELTERS (1959). THE SHELTER IS DESIGNED TO ACCOMMODATE AT LEAST 100 PERSONS FOR 14 DAYS. THE SHELTER WILL PROVIDE THE SPECIFIED FALLOUT AND BLAST PROTECTION, THE REQUIRED INTERIOR ENVIRONMENT, AND THE ESSENTIAL ''HOTEL-TYPE'' EQUIPMENT AT MINIMUM COST. THE SHELTER ITEMS ARE SPECIFIED BY SEVERAL PACKAGES, EACH HAVING ONE OR MORE DIFFERENT ARRANGEMENTS OF ITEMS; DEPENDING ON THE DEGREE OF PROTECTION AND COMFORT DESIRED. THE PROPER SELECTION OF PACKAGES WILL RESULT EITHER IN A 35-PSI OR 10-PSI BLAST AND FALLOUT SHELTER SITED ABOVE OR BELOW GRADE. THE RADIATION PROTECTION FACTOR IS AT LEAST 1 00. ''MOST AUSTERE'' TO ''LEAST AUSTERE'' LIVING ACCOMMODATIONS CAN BE SELECTED. AVERAGE COST DATA FOR THE PACKAGES BY ITEM ARE TABULATED FOR QUANTITIES UP TO 1000. RESPECTIVE COSTS (LESS OVERHEAD, PROFIT, ETC.) FOR 4 COMPLETE SHELTERS ARE ESTIMATED AND PRESENTED GRAPHICALLY. THE COSTS RANGE FROM $19,800 FOR THE LEAST-AUSTERE 35-PSI SHELTER TO $14,200 FOR THE MOST-AUSTERE 10-PSI SHELTER. THE DESIGN MODIFICATIONS ARE BASED ON FINDINGS OF THE USNRDL SHELTER RESEARCH PROGRAM FOR THE PERIOD, 1959 TO JUNE 1962. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-290 532
RAND CORP SANTA MONICA CALIF
SOUTHERN CALIFORNIA IN A THERMONUCLEAR WAR (U)
IV BRODE,HAROLD L.;

UNCLASSIFIED REPORT

DESCRIPTORS: •NUCLEAR WARFARE; •SHELTERS; •SURVIVAL; CIVIL DEFENSE SYSTEMS (U)

LIKELIHOOD OF NUCLEAR ATTACK IN SOUTHERN CALIFORNIA; CHANCE OF SURVIVAL; AND POSSIBLE PROTECTIVE MEASURES ARE DISCUSSED.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-296 828
STANFORD RESEARCH INST MENLO PARK CALIF
DEVELOPMENT OF A SHELTER ALLOCATION AND USE PLAN FOR BOSTON (U)
IV TOWLE,LELAND H.;GREGORY,JOHN G.;

UNCLASSIFIED REPORT

DESCRIPTORS: *CIVIL DEFENSE SYSTEMS, ANALYSIS, COSTS, DATA, LOGISTICS, MOBILIZATION, RADIOACTIVE FALLOUT, RADIOLOGICAL DOSAGE, SHELTERS (U)

DEVELOPMENT OF A SHELTER ALLOCATION AND USE PLAN FOR BOSTON.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-400 255
ARMY ENGINEER RESEARCH AND DEVELOPMENT LABS FORT BELVOIR VA
GROUP SHELTER INVESTIGATION (U)
OCT 62 IV FLYNN,RICHARD M.I

UNCLASSIFIED REPORT

DESCRIPTORS: *SHELTERS, CIVIL DEFENSE SYSTEMS, CONCRETE, COSTS, DESIGN, FEASIBILITY STUDIES, MATERIALS, MATHEMATICAL ANALYSIS, METALS, PLASTICS, SMALL TOOLS, STRUCTURES (U)

STUDIES TO ENABLE UNSKILLED PEOPLE WITH ONLY LIGHT EQUIPMENT TO ERECT LOW-COST GROUP SHELTERS.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-403 714
CORNELL UNIV ITHACA N Y
FOOD SERVICE PROCEDURES IN FALLOUT SHELTERS. (U)
APR 63 204P
CONTRACT: OCD 0562 49

UNCLASSIFIED REPORT

DESCRIPTORS: *FOOD DISPENSING, *RADIOACTIVE FALLOUT, FOOD, TRAINING, PERSONNEL MANAGEMENT, NUTRITION, CONTROL, PREPARATION, SANITARY ENGINEERING, WASTE (SANITARY ENGINEERING), WATER, DISPOSAL, ODORS, TEMPERATURE, LIGHT, STORAGE, CIVIL DEFENCE SYSTEMS, HUMIDITY, ENERGY, INSTRUMENTATION, HEATING, ENERGY CONVERSION, CONTAINERS, MANAGEMENT ENGINEERING, SHELTERS. (U)

CONTENTS: ORGANIZATION AND MANAGEMENT OF FOOD SERVICES THE NATURE OF THE PROBLEM POLICIES OF THE FOOD MANAGER ORGANIZATION OF THE FOOD SERVICES ORIENTATION AND TRAINING OTHER PERSONNEL MANAGEMENT PROBLEMS FOODS AND FEEDING CHARACTERISTICS OF WATER AND FOOD SUPPLIES MENU PLANNING AND STOCKING SELECTION AND DESIGN OF EQUIPMENT SELECTION OF ENERGY SOURCES ISSUING AND INVENTORIES PREPARATION, SERVICE, DISTRIBUTION AND CONTROL SANITATION AND WASTE DISPOSAL ENVIRONMENTAL FACTORS TEMPERATURE AND HUMIDITY ODORS AND ODOR CONTROL LIGHTING REQUIREMENTS, SOURCES AND SCHEMES SPACE ARRANGEMENT, ASSIGNMENT AND PREDICTION. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-403 628
CORNELL UNIV ITHACA N Y
A GUIDE FOR THE TRAINING OF FOOD MANAGERS OF LICENSED FALLOUT SHELTERS. (U)
APR 63 61P
CONTRACT: OCD OS62 49

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SUPPL. TO A RESEARCH STUDY - FOOD SERVICE PROCEDURE IN FALLOUT SHELTERS, AD-403 714.

DESCRIPTORS: *MANAGEMENT ENGINEERING, *FOOD DISPENSING, *RADIOACTIVE FALLOUT, *SHELTERS, *TRAINING, HANDBOOKS, PERSONNEL MANAGEMENT, WATER, CIVIL DEFENSE SYSTEMS, FOODS. (U)
IDENTIFIERS: FALLOUT SHELTERS. (U)

THIS PUBLICATION DEALS WITH THAT PHASE OF THE ADMINISTRATION OF THE LARGE PUBLIC OR SEMI PUBLIC RADIOACTIVE FALLOUT SHELTERS WHICH HAS TO DO WITH THE MANAGEMENT OF THE WATER AND FOOD PROBLEMS. IT IS DESIGNED TO SERVE AS A GUIDE FOR THOSE RESPONSIBLE FOR PLANNING, ORGANIZING AND MAINTAINING THE FACILITIES AND THE VOLUNTARY FORCES THAT WILL BE NEEDED FOR THE SHELTERS AND THE POST-SHELTER FUNCTIONS. IT DESCRIBES THE PURPOSES, ACTIVITIES AND RESPONSIBILITIES OF THE FOOD MANAGER AND SUGGESTS POLICIES, ORGANIZATIONAL PATTERNS, AND ADMINISTRATIVE PRACTICES. THE DISCUSSION IS LARGELY LIMITED TO BASIC PROBLEMS AND PRINCIPLES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-403 829
CORNELL UNIV ITHACA N Y
A MANUAL FOR THE MANAGEMENT OF FOODS IN LICENSED FALLOUT SHELTERS. (U)
APR 63 83P
CONTRACT: OCD OS62 49

UNCLASSIFIED REPORT

DESCRIPTORS: *CIVIL DEFENSE SYSTEMS, *FOOD DISPENSING, DECONTAMINATION, CLASSIFICATION, MANAGEMENT ENGINEERING, HEATING, COSTS, LIGHTING EQUIPMENT, NUTRITION, FOOD, STORAGE, WASTES (SANITARY ENGINEERING), SANITARY ENGINEERING, WATER, DISTRIBUTION, ABNORMAL PSYCHOLOGY, BEHAVIOR, RADIATION INJURIES, CONFINED ENVIRONMENTS, REACTION (PSYCHOLOGY), ADAPTATION (PHYSIOLOGY), FEAR, SLEEP, ADJUSTMENT (PSYCHOLOGY). (U)

MANUAL FOR THE MANAGEMENT OF FOODS IN LICENSED FALLOUT SHELTERS.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-404 194
GAUTNEY AND JONES COMMUNICATIONS INC WASHINGTON, D C
FALLOUTER COMMUNICATIONS STUDY. (U)
DEC 62 171P
CONTRACT: OCD OS62 123

UNCLASSIFIED REPORT

DESCRIPTORS: •COMMUNICATION SYSTEMS, •CIVIL DEFENSE SYSTEMS, SHELTERS, SOCIOMETRICS, PSYCHOLOGY, PUBLIC OPINION, ADJUSTMENT (PSYCHOLOGY), UNITED STATES GOVERNMENT, GEOGRAPHY, NETWORKS. (U)

A STUDY WAS CONDUCTED DURING THE PERIOD MAY THROUGH DECEMBER, 1962, TO DETERMINE THE INTER AND INTRA-EMERGENCY SHELTER INFORMATION REQUIRE MENTS AND TO PROPOSE WAYS AND MEANS OF MEETING THEM WHICH COULD BE EMBODIED IN A PRE-ATTACK SHELTER PLANS. MONTGOMERY COUNTY, MARYLAND, WAS CHOSEN AS A REPRESENTATIVE COMMUNITY FOR THE STUDY PROTOTYPE. THE MAJOR CONSIDERATION FOR THIS STUDY WAS THE ASSUMPTION OF A RADIOACTIVE FALLOUT EFFECT ONLY, COMPELLING ALL IN THE COUNTY TO REMAIN IN FALLOUT SHELTERS FOR A PERIOD OF APPROXIMATELY TWO WEEKS. THE COM MUNICATION REQUIREMENTS NECESSARY FOR THE CONTROL, COHESION, AND MAINTENANCE OF A POPULATION GROUP OF SOME 350,000 FOR THE TWO-WEEK PERIOD FOLLOW ING THE THERMONUCLEAR ATTACK WERE IDENTIFIED. THESE REQUIREMENTS, TOTALLING TEN CATEGORIES OF INFORMATION, WERE THEN SUBJECTED TO AN ANALYSIS TO DETERMINE THE TIME REQUIRED TO TRANSMIT, RECEIVE, AND RELAY ESSENTIAL MESSAGES OVER A SINGLE LEASED WIRE TELEPHONIC NETWORK, EMPLOYING THE PRINCIPLE OF A COMMAND AND CONTROL COMMUNI CATION NET. ALSO PROPOSED WAS A TWO-WAY RADIO BACKUP TO THE PRIMARY TELEPHONIC SYSTEM. THE TIME ANALYSIS DEMONSTRATED THAT THE PROPOSED COMMUNICATION SYSTEM WILL BE MORE THAN ADEQUATE TO FULFILL ALL THE COMMUNICATION REQUIREMENTS BUT ONE. THE EXCEPTION IS THE CATEGORY OF IN FORMATION RELATING TO THE SEPARATION OF IN DIVIDUAL FAMILY MEMBERS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-405 709
PANERO (GUY B) INC NEW YORK
SHELTER CONFIGURATION FACTORS (ENGINEERING AND COST ANALYSES). (U)
APR 63 1V
CONTRACT: OCD OS62 108
MONITOR: OUNCLASSIFIED REPORT

UNCLASSIFIED REPORT

DESCRIPTORS: •SHELTERS, COSTS, ENGINEERING, CONFIGURATION, ANALYSIS, SHIELDING, BLAST, FIRES, CHEMICAL WARFARE AGENTS, BIOLOGICAL WARFARE AGENTS, RADIOLOGICAL WARFARE AGENTS, RADIOACTIVE FALLOUT, DESIGN, STRUCTURAL PROPERTIES, CONCRETE, STEEL, BEDDING, HEAT TRANSFER, ELECTRICAL EQUIPMENT, OXYGEN CONSUMPTION, OXYGEN EQUIPMENT, CARBON DIOXIDE, UNDERGROUND STRUCTURES, TEMPERATURE, HUMIDITY, PICTURES, SOILS, TABLES, CIVIL DEFENSE SYSTEMS. (U)

SHELTER SHAPES AND SIZES THAT APPEAR TO OFFER THE BEST COMPROMISE FOR STANDARDIZING NEW SHELTER DESIGN ARE DESCRIBED. THE STUDY HAD THE FOLLOWING GENERAL CONDITIONS AND CRITERIA: (1) BELOW GROUND, SINGLE-UNIT STRUCTURES WITH A MINIMUM OF THREE FEET OF EARTH COVER SUCH AS MIGHT BE CONSTRUCTED UNDER PARKS OR PLAYGROUNDS; THIS WILL RESULT IN RADIATION PROTECTION FACTORS OF 1000 OR MORE; (2) CONSIDERATION OF BOTH FALLOUT AND BLAST SHELTERS; FALLOUT SHELTERS TO BE DESIGNED ON A NOMINAL LIVE-LOAD BASIS AND BLAST SHELTERS TO BE DESIGNED AT 35 AND 60 PSI OVERPRESSURE; (3) AN EXTENDED SHELTER OCCUPANCY TIME AND A CLOSURE CAPABILITY OF UP TO 24 HOURS; (4) PROTECTION AGAINST THE INDUCTION OF CHEMICAL, BIOLOGICAL AND RADIOLOGICAL CONTAMINANTS; AND (5) SINGLE-UNIT CAPACITIES OF 100, 500 AND 1000 PERSONS EACH WITH A 5-MINUTE LOADING CAPABILITY. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-405 930
STANFORD RESEARCH INST MENLO PARK CALIF
LINCOLN SHELTER UTILIZATION STUDY. VOLUME II. A SHELTER ASSIGNMENT PROCEDURE. (U)
APR 63 90P GUALTIERI ,ANGELO ;
JENSEN,GORDON F. ;
CONTRACT: OCD-05-62-135
MONITOR: OAD RM106

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: ORIGINTAINS COLOR PLATES; ALL DDC REPRODUCTIONS WILL BE IN BLACK AND WHITE. ORIGINAL MAY BE SEEN IN DDC HQ.

DESCRIPTORS: •SHELTERS, •POPULATION, •CIVIL DEFENSE SYSTEMS, MAPPING, DATA PROCESSING SYSTEMS, STATISTICAL ANALYSIS, COSTS, BEHAVIOR, RADIOACTIVE FALLOUT, DISTRIBUTION. (U)

THIS IS VOL. II OF A REPORT ENTITLED LINCOLN SHELTER UTILIZATION STUDY. VOL. I IS ENTITLED 'A REVIEW OF THE REQUIREMENTS OF SHELTER UTILI ZATION PLANNING.' THIS SECOND REPORT DEALS SPECIFICALLY WITH A STEP-BY-STEP PROCESS OF ASSIGNING THE POPULATION OF LINCOLN, NEBRASKA TO FALLOUT SHELTERS. THE TECHNIQUES DEVELOPED THEREIN CAN READILY BE APPLIED TO NUMEROUS CITIES HAVING CHARACTERISTICS SIMILAR TO THOSE OF LINCOLN, NEBRASKA. LARGE CENSUS TRACT MAPS CAN BE DESIGNED AND USED IN ASSIGNING BLOCKS OF PEOPLE TO SHELTERS. METHODS OF DEVELOPING DAY AND NIGHTTIME POPULATION DATA FOR ANY GIVEN CITY ARE DESCRIBED. A TECHNIQUE OF PUTTING THE SHELTER ASSIGNMENT ON DATA-PROCESSING CARDS FOR INFORMATION RETRIEVAL IS DISCUSSED. METHODS OF SORTING PUNCHED CARDS INTO USEFUL SHELTER ASSIGN MENT REPORTS ARE PRESENTED. CONSIDERABLE ATTEN TION IS GIVEN TO DEMONSTRATING THE NUMBERS OF PEOPLE AND WOULD BE SHELTERED UNDER THREE SEPA RATE WARNING TIMES. CERTAIN RULES, BASED ON THE NATURAL BEHAVIOR OF PEOPLE, ARE DEVELOPED AS AN AID IN THE ASSIGNMENT PROCESS. ESTIMATES OF COST AND EFFORT EXPENDED ARE PROVIDED AS A GUIDE TO ANY CD OFFICIAL WHO WOULD DESIRE TO USE THE TECH NIQUE DESCRIBED THEREIN.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-405 948
STANFORD RESEARCH INST MENLO PARK CALIF
LINCOLN SHELTER UTILIZATION STUDY, VOLUME I, A REVIEW OF THE REQUIREMENTS FOR SHELTER UTILI ZATION PLANNING, (U)
APR 63 96P JENSEN,GORDON F.;
GUALTIERI,ANGELO ;RUNGE,W.A.;GREENBERG,B.;
REPT. NO. OAD RM106 V1
CONTRACT: OCD-OS-62-135

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: ORIGINAL CONTAINS COLOR PLATES: ALL DDC REPRO DUCTIONS WILL BE IN BLACK AND WHITE. ORIGINAL MAY BE SEEN IN DDC HQ.

DESCRIPTORS: •SHELTERS, BUILDINGS, RADIO COMMUNICATION SYSTEMS, TRANSPORTATION, EDUCA TION, NATIONAL DEFENSE, RADIO EQUIPMENT, DE FENSE SYSTEMS, OPERATION, TELEPHONE COMMUNI CATION SYSTEMS, CIVIL DEFENSE SYSTEMS. (U)

THIS REPORT ASSESSES THE SITUATION WITH REGARD TO CIVIL DEFENSE IN LINCOLN, NEBRASKA. LINCOLN IS A TYPICAL MID-WESTERN CITY AND REPRESENTATIVE OF MANY CITIES IN THE UNITED STATES. AS A RE SULT, THE SUBJECTS TREATED IN THIS REPORT ARE APPLICABLE TO MANY CITIES. THE SERIOUS PROBLEM OF INSUFFICIENT EXISTING BUILDINGS SUITABLE FOR USE AS SHELTERS IS CONSIDERED. A SOLUTION IN VOLVING THE USE OF BUILDINGS WITH LOWER PROTEC TION FACTORS AND A MOBILITY SYSTEM AFTER ATTACK IS PROPOSED. A RADIO COMMUNICATIONS SYSTEM SUITABLE TO THE NEEDS OF THE AREA IS PROPOSED AND DISCUSSED. A METHOD OF ASSIGNING PEOPLE TO SHELTERS IS DEMONSTRATED. A SERIES OF MAPS IS DEVELOPED WHICH AID IN MAKING THE SHELTER ASSIGN MENTS. A SEPARATE AND SUPPLEMENTAL REPORT, VOL UME II OF THIS STUDY ENTITLED "LINCOLN SHELTER UTILIZATION STUDY - A SHELTER ASSIGNMENT PROCE DURE," HAS BEEN ISSUED, AND PROVIDES A SPECIFIC ASSIGNMENT OF THE PEOPLE OF LINCOLN TO EXISTING SHELTER AND SHOWS THE NEED FOR ADDITIONAL SHELTER. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-406 442
RAND CORP SANTA MONICA CALIF
RECENT DEVELOPMENTS IN THE SOVIET CIVIL DEFENSE PROGRAM. (U)
JUN 63 26P GOURE,LEON I
REPT. NO. P2752

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PRESENTED TO SUBCOMMITTEE NO. 3 OF THE ARMED SERVICES COMMITTEE OF THE HOUSE OF REPRESENTATIVES, WASHINGTON, D. C., JUNE 17, 1963.

DESCRIPTORS: •CIVIL DEFENSE SYSTEMS, TRAINING, SHELTERS, MILITARY STRATEGY, FOREIGN POLICY, MILITARY ORGANIZATIONS, WARFARE, ANALYSIS. (U)
IDENTIFIERS: USSR. (U)

THE SOVIET CIVIL DEFENSE PROGRAM IS FAR FROM COMPLETE AND SUFFERS FROM A VARIETY OF SHORTCOMINGS. APART FROM THE NOTORIOUS INEFFICIENCY OF SOVIET ADMINISTRATION, THERE IS THE RELATIVELY SHORT TIME THAT MANY PERSONS WILL BE ABLE TO REMAIN IN SHELTERS, BECAUSE OF LIMITED FOOD SUPPLIES. GREAT CROWDING AND ABSENCE OF COOLING EQUIPMENT WILL FORCE LARGE NUMBERS OF THEM TO EVACUATE THEIR SHELTERS VIA CONTAMINATED AREAS WHILE THE RADIATION LEVEL MAY STILL BE FAIRLY HIGH. THE SOVIETS RECOGNIZE THAT THE EFFECTIVENESS OF CIVIL DEFENSE, SURVIVING THE ATTACK, AND WINNING THE WAR WILL DEPEND TO A GREAT EXTENT ON THEIR ABILITY TO BLUNT OR WEAKEN THE ENEMY'S ATTACK. THIS IS WHY SOVIET DOCTRINE ALSO EMPHASIZES PRE-EMPTIVE ATTACKS AS WELL AS THE IMPORTANCE OF ANTI-AIRCRAFT AND ANTI-MISSILE D. DESPITE THE PRESENT INADEQUACIES OF SOVIET CIVIL DEFENSE AND THE GROWING DESTRUCTIVE NESS OF MODERN WEAPONS, THE SOVIET LEADERSHIP BELIEVES THAT THE PRESERVATION OF THE SOVIET STATE AND SOCIETY IN THE EVENT OF A WAR MERITS CONSIDERABLE EFFORTS AND THE EXPENDITURE OF RELATIVELY SCARCE MONEY AND RESOURCES. IN THE AUTHOR'S OPINION, THE AVAILABLE EVIDENCE LEAVES NO DOUBT THAT THE SOVIET UNION IS ENGAGED IN AN EXTENSIVE CIVIL DEFENSE PROGRAM AND THAT IT BELIEVES IT TO BE WORTH FURTHER EFFORTS AND CONTINUED INVESTMENTS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-408 308
C-E-I-R INC BEVERLY HILLS CALIF
COMMUNITY ATTITUDES AND ACTION ON THE FALLOUT SHELTER ISSUE. A CASE STUDY OF TWO COMMUNITIES LIVERMORE, CALIFORNIA AND NORWALK, CONNECTICUT. (U)
63 117P LU,JOHN Y.;REDDER,LEO G.;WOLFSON,AND ROBERT J.;
CONTRACT: OCD OS62 102

UNCLASSIFIED REPORT

DESCRIPTORS: (*CIVIL DEFENSE SYSTEMS, SHELTERS), (TERS, RADIOACTIVE FALLOUT), (*POPULATION, BEHAVIOR), STATISTICAL ANALYSIS, REACTION (PSYCHOLOGY), ATTITUDES, LEADERSHIP, NUCLEAR WARFARE, GROUP DYNAMICS, DECISION MAKING. (U)
IDENTIFIERS: 1963. (U)

A CASE STUDY OF TWO COMMUNITIES, LIVERMORE, CALIFORNIA AND NORWALK, CONNECTICUT, WAS CONDUCTED BECAUSE THEY HAD BEEN INVOLVED IN SUBSTANTIAL PUBLIC DISCUSSION OF COMMUNITY SHELTER PROGRAMS AND APPEARED TO BE ON THE VERGE OF CONSTRUCTING SHELTERS ON A COMMUNITY-WIDE BASIS. THE PRIMARY PURPOSE OF THE STUDY WAS TO INVESTIGATE THE ADOPTION-DIFFUSION, SOCIAL ACTION AND DECISION-MAKING PROCESSES ABOUT COMMUNITY SHELTER PROGRAMS. UNFORTUNATELY THE ADOPTION OF A SHELTER PROGRAM NEVER MATERIALIZED IN EITHER OF THE TWO COMMUNITIES DUE TO EXTERNAL, AS WELL AS INTERNAL, FORCES, AND WHAT WAS OBSERVED WAS A FRUSTRATED EFFORT ON THE PART OF SOME COMMUNITY MEMBERS TO BUILD COMMUNITY SHELTERS. IN BOTH COMMUNITIES, THOSE WHO ACTIVELY PROMOTED THE SHELTER PROGRAMS WERE SCIENTISTS AND/OR ENGINEERS AND THEY WERE RELATIVELY INEXPERIENCED IN COMMUNITY LEADERSHIP. THERE WAS ALSO A NOTABLE LACK OF SUPPORT FROM THE KEY COMMUNITY LEADERS WHO ARE USUALLY ACTIVE IN CONVENTIONAL COMMUNITY AFFAIRS SUCH AS RED CROSS DRIVES AND HOSPITAL FUND CAMPAIGNS. THIS PROBABLY CONTRIBUTED SIGNIFICANTLY TO THE FACT THAT THE ADOPTION OF A SHELTER PROGRAM PROVED TO BE ABORTIVE IN BOTH COMMUNITIES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-410 891
AMERICAN INST FOR RESEARCH PITTSBURGH PA
PLANNING AND ORGANIZING SHELTER NON-OPERATIONAL ACTIVITY PROGRAMS. (U)
JUN 63 67P SIROKY,FRANK R.;
ENINGER,MAX U.;
CONTRACT: OCD OS62 107

UNCLASSIFIED REPORT

DESCRIPTORS: (*SHELTERS, NUCLEAR WARFARE), (*MANAGEMENT ENGINEERING, SHELTERS), CIVIL DEFENSE SYSTEM, SOCIOLOGY, SOCIAL COMMUNICATION, MAINTENANCE, OPERATION, CONFINEMENT, PROTECTIVE COVERINGS, PSYCHOLOGY, TRAINING, POPULATION, BIBLIOGRAPHIES. (U)
IDENTIFIERS: SOCIAL ACTIVITIES, RECREATION, SOCIAL CONTROL, SHELTEREES. (U)

THE STUDY EXPLORED THE NEED FOR A PLANNED PROGRAM OF IN-SHELTER ACTIVITIES, SUCH AS TRAINING, RECREATION, PHYSICAL FITNESS, AND SHELTEREE SERVICES, TO AID IN THE PREVENTION OF DEMORALIZATION AND LOSS OF SOCIAL CONTROL. THE ANALYSIS OF THE PROBLEM CONCLUDED THAT SUCH IN-SHELTER ACTIVITIES WOULD PROBABLY BE HELPFUL AS AN AUXILIARY MEANS OF PROMOTING SHELTEREE MORALE AND SOCIAL CONTROL IN THE EVENT OF POST-NUCLEAR ATTACK CONFINEMENT. THE SPECIFIC POTENTIAL BENEFITS TO BE GAINED FROM SUCH ACTIVITIES INCLUDE: (1) REDUCTION OF NEGATIVE EMOTIONAL STRESS, (2) BREAKDOWN OF PERSONAL BARRIERS, (3) IMPROVED RESPONSIVENESS TO SHELTER LEADERSHIP, (4) IMPROVED CONTROL OVER SHELTEREE BEHAVIOR, AND (5) A SENSE OF FASTER PASSAGE OF TIME. THE FOLLOWING PRINCIPLES SHOULD CHARACTERIZE PLANNING, ORGANIZING AND DIRECTING ACTIVITY PROGRAMS. (1) ACTIVITIES SELECTED SHOULD FACILITATE ACHIEVEMENT OF SHELTER GOALS, (2) ACTIVITIES SELECTED SHOULD BE COMPATIBLE WITH THE SHELTEREES, (3) ACTIVITIES SHOULD BE COMPATIBLE WITH SHELTER CONDITIONS, (4) ACTIVITIES SHOULD REFLECT SHELTER PRIORITIES AND REQUIREMENTS, (5) ACTIVITIES REQUIRE PRE- AND POST-ENTRY TRAINING, (6) ACTIVITIES SHOULD REQUIRE LITTLE OR NO STOCKING OF SUPPLIES OTHER THAN GUIDANCE MATERIALS, (7) ACTIVITY LEADERS REQUIRE SOME PRE-ENTRY TRAINING ON PLANNING, ORGANIZING, AND DIRECTING ACTIVITY PROGRAMS, AND (8) ACTIVITIES MUST BE VOLUNTARY, NOT FORCED. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-411 787
RESEARCH TRIANGLE INST DURHAM N C
EMERGENCY HEALTH PROBLEMS STUDY. (U)
DESCRIPTIVE NOTE: FINAL REPT., VOL. I,
JUL 63 IV HERZOG,W. T. ;
CONTRACT: OCD OS62 250
PROJ: OCD PROJ. 2411A

UNCLASSIFIED REPORT

DESCRIPTORS: *PUBLIC HEALTH ,CASUALTIES ,CIVIL DEFENSE SYSTEMS ,DISEASES ,EPIDEMIOLOGY ,INFECTIONS *MILITARY MEDICINE ,NUCLEAR WARFARE ,POPULATION *RADIOACTIVE FALLOUT ,RESPIRATORY SYSTEM ,SHELTERS *SURVIVAL (U)

THE PEACETIME HEALTH STATUS OF THE POPULATION (BASED ON THE U. S. PUBLIC HEALTH SERVICE NATIONAL HEALTH SURVEY) AND THE RANGE OF COMPLICATIONS DUE TO SHELTER LIVING WERE EVALUATED. ROUGH ESTIMATES SUGGEST THAT MEDICAL CARE AND PUBLIC HEALTH MEASURES COULD ADD A NUMBER OF SURVIVORS EQUAL TO 1 - 2 PERCENT OF THE TOTAL PREATTACK POPULATION DURING A SINGLE TWO-WEEK PERIOD UNDER IDEAL CONDITIONS. POSTATTACK MEDICAL CARE OF CASUALTIES WOULD NOT SERIOUSLY COMPETE WITH MEASURES DIRECTED TOWARD HEALTH MAINTENANCE OF THE GENERAL POPULATION, EXCEPT FOR CONSUMABLE MEDICAL SUPPLIES. BECAUSE CASUALTY CARE AND HEALTH MAINTENANCE OF NON-CASUALTIES ARE CAPABLE OF ADDING COMPARABLE NUMBERS OF SURVIVORS DURING THE SHELTER PERIOD (A MAXIMUM OF 2 PERCENT OF THE PREATTACK POPULATION FOR EITHER TYPE OF EMPHASIS), IT IS CONCLUDED THAT BOTH APPROACHES SHOULD BE EMPHASIZED. THE AVAILABLE DATA ON CHRONIC, NON-COMMUNICABLE DISEASES IS SUFFICIENT TO ALLOW MORE QUANTITATIVE STOCKPILE PLANNING OF MEDICAL ITEMS FOR THESE CONDITIONS IN SHELTERS. FURTHER RESEARCH WILL BE NECESSARY BEFORE THIS IS TRUE FOR COMMUNICABLE DISEASES, BECAUSE OF THE COMPLEXITY OF DISEASE SPREAD DURING SHELTER CONFINEMENT. A METHOD FOR OPTIMIZING THE ALLOCATION OF DRUGS FOR SUPPORT OF NON-COMMUNICABLE CHRONIC AND ACUTE CONDITIONS TO SHELTERS IN A STOCKPILING PROGRAM IS SUGGESTED AND ILLUSTRATED BY AN EXAMPLE. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-412 342
AMERICAN HYDROMATH CO NEW YORK
PLANNING GUIDES FOR DUAL-PURPOSE SHELTERS. (U)
JUL 63 148P SMITH,ROBERT W.;LASKY,AND MARY ANN ;
REPT. NO. C93 9 63TR
CONTRACT: OCD 0562 104

UNCLASSIFIED REPORT

DESCRIPTORS: (*SHELTERS, RADIOACTIVE FALLOUT), CIVIL DEFENSE SYSTEMS, RADIOLOGICAL CONTAMINATION, DECONTAMINATION, VENTILATION, AIR, PURIFICATION, WATER SUPPLIES, FOOD DISPENSING, LIGHTING EQUIPMENT, SANTARY ENGINEERING, DISPOSAL. (U)
IDENTIFIERS: 1963. (U)

THIS DOCUMENT PROVIDES GENERAL PLANNING INFORMATION RELATIVE TO THE PRINCIPAL FACTORS WHICH MUST BE CONSIDERED IN THE DEVELOPMENT OF GROUP FALL OUT SHELTER FACILITIES. IT DISCUSSES A NUMBER OF POSSIBLE METHODS FOR DEALING WITH EACH FACTOR. EMPHASIS IS PLACED UPON THE POTENTIAL DUAL-PUR POSE USE OF FACILITIES USUALLY AVAILABLE WITHIN EXISTING STRUCTURES. THE INFORMATION WHICH IS PROVIDED IS DESIGNED TO PERMIT THE SHELTER PLANNER TO SELECT SPECIFIC METHODS FOR MEETING EACH SHELTER REQUIREMENT ACCORDING TO THE NEEDS AND OPPORTUNITIES DICTATED BY HIS PARTICULAR SITUATION. THE PLANNING AREAS DISCUSSED IN THE REPORT INCLUDE# RADIOLOGICAL PROTECTION, OTHER WEAPON EFFECTS, TEMPERATURE AND ATMOSPHERE CON TROL, WATER SUPPLY, FOOD, LIGHTING, FIRE PROTEC TION, MEDICAL, SANITATION, COMMUNICATIONS, SLEEPING FACILITIES, WARNING AND SHELTER ENTRY, AND ORGANIZATION AND MANAGEMENT. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-415 040
STANFORD RESEARCH INST MENLO PARK CALIF
PLANNING FOR SHELTER USE IN SAN DIEGO, (U)
SOP WITZEL,FREDERICK D. ;
ROSA,NICHOLAS A. ;

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*SHELTERS, CIVIL DEFENSE SYSTEMS), MANAGEMENT ENGINEERING, PERSONNEL MANAGEMENT, MEDICAL PERSONNEL (U)
IDENTIFIERS: PLANNING, 1963, SAN DIEGO (U)

PLANNING FOR CIVIL DEFENSE SHELTERS IN SAN DIEGO,

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-415 614
GENERAL MOTORS CORP FLINT MICH AC SPARK PLUG DIV
SHELTER MEDICAL SUPPORT SYSTEM STUDY. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
AUG 63 61P HERZOG,W.T.;WELLS,W.L.;
CROMARTIE,W.J.;
REPT. NO. OU107
CONTRACT: OCD OS62 271
PROJ: 1341A

UNCLASSIFIED REPORT

DESCRIPTORS: (*SHELTERS, MEDICAL SUPPLIES), (*CIVIL DEFENSE SYSTEMS, SHELTERS), MEDICAL PERSONNEL, RADIOACTIVE FALLOUT, SURVIVAL, COMMUNICATION SYSTEMS, TRANSPORTATION, MATHEMATICAL MODELS. (U)
IDENTIFIERS: MEDICAL SUPPORT SYSTEM, 1963. (U)

PART I STUDIES VARIOUS POLICIES OF ALLOCATING MEDICAL RESOURCES (MANPOWER AND MATERIAL) IN AN AREA NETWORK OF PUBLIC FALLOUT SHELTERS DURING A POST-NUCLEAR EMERGENCY PERIOD OF TWO WEEKS. IT IS CONCLUDED THAT A POLICY OF ASSIGNING MEDICAL RESOURCES TO LARGE SHELTERS IS SUPERIOR TO CONCENTRATING THEM IN HOSPITALS OR TREATMENT CENTERS. THE NEAR OPTIMAL STRATEGY REQUIRES DISPERSAL OF PHYSICIANS IN HIGH PF SHELTERS, BECAUSE OF THEIR POTENTIAL VALUE IN THE POST-SHELTER PERIOD. IN FALLOUT ONLY ENVIRONMENTS, MEDICAL SUPPORT OF THE POPULATION W ULD PLACE MINIMAL DEMANDS ON THE TRANSPORTATION, SHELTER MANAGEMENT, AND WARNING SYSTEMS. DEMANDS ON THE COMMUNICATIONS SYSTEM ARE LIKELY TO BE EXCESSIVE. RECOMMENDATIONS OF ADDITIONAL RESEARCH FOR MEDICAL PLANNING ARE INCLUDED. PART II INCLUDES BACKGROUND DATA ESSENTIAL FOR THE MEASURES OF EFFECTIVENESS USED IN PART I. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-420 442
AMERICAN INST FOR RESEARCH PITTSBURGH PA
GUIDE TO SHELTER ORGANIZATION AND MANAGEMENT, (U)
SEP 63 1V BEND,EMIL ;GRIFFARD,C. DAVID
;SCHANER,ADA J. ;SHIVELY,ALIZA M. ;
HUDAK,VIVIAN M. ;
REPT. NO. AIR C99 9 63TR
CONTRACT: OCD 0S62 164

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*SHELTERS, MANAGEMENT ENGINEERING),
(*MANAGEMENT ENGINEERING, SHELTERS), PROTECTIVE
COVERINGS, SAFETY, SANITARY ENGINEERING, FOOD, WATER,
MEDICAL SUPPLIES, ELECTRIC POWER PRODUCTION,
SOCIOLOGY, COMMUNICATION SYSTEMS, LOGISTICS, TRAINING,
RECREATION, CIVIL DEFENSE SYSTEMS (U)
IDENTIFIERS: ORGANIZATION, 1963, REPAIR (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-421 043
NAVAL RADIOLOGICAL DEFENSE LAB SAN FRANCISCO CALIF
CIVIL DEFENSE UTILIZATION OF SHIPS AND BOATS, (U)
233P VAN HORN,W. H. IFREUND,D.

MONITOR: NRDL TR659

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: ORIGINAL CONTAINS COLOR PLATES. ALL DDC REPRODUCTIONS WILL BE IN BLACK AND WHITE. ORIGINAL MAY BE SEEN IN DDC HEADQUARTERS.

DESCRIPTORS: (*CIVIL DEFENSE SYSTEMS, SHIPS (NON-MILITARY)), (*RADIOACTIVE FALLOUT, SHELTERS), BOATS, FEASIBILITY STUDIES, NUCLEAR WARFARE, POWER PLANTS (ESTABLISHMENTS), THERMAL RADIATION, STATISTICAL DATA, POPULATION, URBAN AREAS (U)
IDENTIFIERS: WATERFRONTS, 1963 (U)

VARIOUS WAYS IN WHICH SHIPS AND BOATS MIGHT SUPPLEMENT THE OVERALL CIVIL DEFENSE PROGRAM WERE INVESTIGATED. BOTH MERCHANT AND RESERVE (MOTHBALL) FLEET SHIPS WERE CONSIDERED FOR THE PART THEY MIGHT PLAY IN A LIFESAVING, LIFE-SUSTAINING CIVIL DEFENSE CAPACITY. DATA FOR TWO PORT CITIES WERE ANALYZED TO OBTAI.. INFORMATION ON POPULATION DISTRIBUTION AND SHIPPING ACTIVITY. ENGINEERING FEASIBILITY STUDIES WERE MADE OF THE USE OF SHIPS AS PERSONNEL SHELTERS AND THE AVAILABILITY OF SHIPS' UTILITIES FOR USE BY SHORE INSTALLATIONS. THE PROTECTION OFFERED FROM NUCLEAR FALLOUT RADIATION WAS CALCULATED FOR TWO CLASSES OF SHIPS. IT WAS CONCLUDED THAT SHIPS AND BOATS COULD PROVIDE EVACUATION OR FALLOUT-SHELTER FACILITIES, OR BOTH, BEFORE OR DURING A NUCLEAR ATTACK. FOR THE POSTATTACK SITUATION, SHIPS COULD SERVE AS HEADQUARTERS, HOSPITALS, LIVING QUARTERS, STOREHOUSES, AND PRIME PRODUCERS OF ELECTRICAL POWER AND POTABLE WATER. IT IS RECOMMENDED THAT FURTHER STUDIES BE MADE OF SELECTED PORT CITIES TO DETERMINE HOW SHIPS AND BOATS COULD BEST BE USED TO SUPPLEMENT PRESENT CIVIL DEFENSE CAPABILITIES OF THESE CITIES. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-421 933
OPERATIONS RESEARCH INC SILVER SPRING MD
STUDY OF TACTICAL MOVEMENT CONCEPTS AND PROCEDURES FOR CIVIL DEFENSE PLANNING. (U)
AUG 63 206P HAMBERG,W. A. ;SALEE,A. M. ; WATKINS,R. H. ;
REPT. NO. 210
CONTRACT: OCD OS62 187

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*CIVIL DEFENSE SYSTEMS, SHELTERS), MATHEMATICAL MODELS, POPULATION, URBAN AREAS, ANALYSIS, DISTRIBUTION, REACTION (PSYCHOLOGY), WARNING SYSTEMS (U)
IDENTIFIERS: MOVEMENT ANALYSIS, 1963 (U)

A STUDY WAS MADE OF THE FACTORS AND DETERMINANTS THAT AFFECT THE EMERGENCY MOVEMENT TO SHELTERS OF URBAN POPULATIONS UNDER CONDITIONS OF LITTLE OR NO WARNING. AN ANALYTICAL MODEL WAS DEVELOPED TO DETERMINE THE NUMBER OF PEOPLE ARRIVING AT SHELTER AS A FUNCTION OF TIME. THE EFFICACY OF THIS MODEL WAS DEMONSTRATED BY THE PROOF-TESTING OF IT ON THREE SELECTED CITIES. THE METHOD IS GENERAL IN NATURE AND PERMITS PRACTICAL APPLICATION IN ANALYZING SHELTERING CAPABILITES UNDER VARYING CONDTIONS OF WEATHER, SEASONS, AND DAYS OF THE WEEK. TECHNIQUES ARE DEVELOPED FOR DETERMINING POSTURES (I.E., ACTIVITY AND PLACE) OF THE MAJOR ELEMENTS OF THE POPULATION, AND BY INTEGRATING THESE POSTURES THE DISTRIBUTION OF THE POPULATION AT ANY SELECTED MOMENT IS DETERMINED. AN EXAMPLE OF A *HAND* SOLUTION FOR THE MODEL IS PRESENTED IN DETAIL FOR ONE CITY; RESULTS ARE SHOWN FOR THREE CITIES. GENERAL CONCLUSIONS AND RECOMMENDATIONS ARE DELINEATED; SUGGESTIONS ARE MADE FOR FUTURE APPLICATION AND EXPLOITATION OF THE METHOD AND TECHNIQUES FOR THE EVALUATION OF SHELTERING POLICIES AND OPERATING PLANS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BHL27

AD-425 924
ARMY NATICK LABS MASS
LOW-COST SLEEPING FACILITY. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
OCT 62 56P GATES,JOHN W. ;
SCHWANER,ROBERT M. ;
PROJ: CD1310

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*SHELTERS, BEDDING), (*BEDDING, COSTS), CLOTHING, MATERIALS, CIVIL DEFENSE SYSTEMS (U)
IDENTIFIERS: SLEEPING FACILITY, 1962, COLOR CODING SYSTEM (U)

DURING THIS STUDY, TWO PROTOTYPE BUNKING FACILITIES WERE DEVELOPED WITH INCORPORATE LOW COST AND MAXIMUM SPACE UTILIZATION. BOTH UNITS UTILIZE A METAL FRAMEWORK WITH A PLYWOOD SLEEPING SURFACE AND ARE CAPABLE OF BEING TIERED 3, 4 AND 5 HIGH FOR HIGH DENSITY SLEEPING. THE UNITS ARE ALSO CAPABLE OF BEING ASSEMBLED AND DISASSEMBLED WITH A MINIMUM OF EFFORT AND TIME AND CAN BE CONVERTED INTO SITTING AND MESSING FACILITIES. THE RECOMMENDED BUNK SIZE IS 75 IN. LONG BY 24 IN. WIDE WITH 20 IN. VERTICAL SPACING. THE COST ESTIMATE PER PERSON IN QUANTITY PURCHASES IS ESTIMATED AT $3.00 OR LESS. ANY FURTHER INVESTIGATIONS IN HIS AREA SHOULD INCLUDE MORE EXTENSIVE STUDIES ON THE SLEEPING SURFACE MATERIAL, DEVELOPMENT WORK ON THE REFINEMENT OF THE PROTOTYPES, DEVELOPMENT OF A COLOR CODING SYSTEN TO FACILITATE EASE OF ASSEMBLY, A DETAILED INSTRUCTION BOOKLET FOR ASSEMBLING THE UNITS AND A SPECIFICATION FOR PURCHASE. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-427 995
RESEARCH TRIANGLE INST DURHAM N C
IMPROVEMENT OF PROTECTION DATA BASE FOR DAMAGE ASSESSMENT AND DATA BASE ON SHELTER NEEDS: VOLUME II. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
JAN 64 IV MCMULLAN,PHILIP ;
NEBLETT,JOHN ;HILL,EDWARD ;SWEENY,HALE ;
MCGILL,PHILIP ;
CONTRACT: OCD OS62 144
PROJ: 0062 83

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*RADIOACTIVE FALLOUT, SHELTERS;, CIVIL DEFENSE SYSTEMS, POPULATION, EXPOSURE, ELECTRIC POWER PRODUCTION, MATHEMATICAL MODELS, VULNERABILITY, DAMAGE, ANALYSIS, BUILDINGS, POWER PLANTS (ESTABLISHMENTS), DISTRIBUTION, COMPUTERS, MAGNETIC TAPE, MAGNETIC CORES (U)
IDENTIFIERS: BASEMENTS, 1964, DATA FLOW (U)

THIS REPORT CONTAINS FIVE STUDIES CONCERNED WITH OBTAINING, COMPILING, OR ANALYZING FALLOUT SHELTER PROTECTION DATA. THESE STUDIES COVER THE FOLLOWING SUBJECTS: (1) A REVIEW OF THE RESIDENTIAL BASEMENT DATA WHICH WERE OBTAINED FROM THE 1960 U. S. CENSUS OF HOUSING; (2) AN EXAMINATION OF ELECTRIC POWER AVAILABILITY IN THE POSTATTACK PERIOD, WITH EMPHASIS UPON FALLOUT PROTECTION IN POWER PLANTS; (3) THE PREPARATION OF A PROCEDURE FOR EXTRACTING SUMMARY DISTRIBUTIONS OF OVERPRESSURE, REFERENCE INTENSITY, AND FALLOUT ARRIVAL TIME AND RELATING THESE TO NUMBERS OF PEOPLE EXPOSED; THESE DATA ARE TO BE EXTRACTED FROM THE ATTACK ENVIRONMENT III OUTPUT TAPES OF THE JUMBO III DAMAGE ASSESSMENT SYSTEM; (4) THE RE-EVALUATION, WITH NATIONAL FALLOUT SHELTER SURVEY DATA, OF AN ANALYTICAL MODEL FOR PREDICTING FALLOUT PROTECTION FOR PEOPLE AS A FUNCTION OF THEIR DISTANCE FROM THE CENTER OF A CITY; AND (5) A STATISTICAL ANALYSIS OF NFSS DATA FROM HOUSTON, TEXAS; AND DURHAM, NORTH CAROLINA, PERFORMED TO DETERMINE DISTRIBUTION FUNCTIONS EXPRESSING THEIR SHELTER CHARACTERISTICS. THESE ANALYTICAL REPRESENTATIONS OF NFSS DATA ARE APPLIED, IN AN ILLUSTRATIVE EXAMPLE, TO OPTIMAL ALLOCATION OF IMPROVEMENT DOLLARS TO VENTILATING BELOW GROUND SHELTERS TO INCREASE THEIR CAPACITY. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-428 008
RESEARCH TRIANGLE INST DURHAM N C
IMPROVEMENT OF PROTECTION DATA BASE FOR DAMAGE ASSESSMENT AND DATA BASE ON SHELTER NEEDS. VOLUME I. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
JAN 64 IV MCMULLAN,PHILIP ;
NEBLETT,JOHN ;BATTLE,JOSEPH ;CAMPBELL,HERBERT ;
LUDGIN,QUENTIN ;
REPT. NO. R 0082 83
CONTRACT: OCD 0562 144

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*RADIOACTIVE FALLOUT, SHELTERS), (*SHELTERS, CIVIL DEFENSE SYSTEMS), DATA PROCESSING SYSTEMS, DAMAGE, ANALYSIS, CASUALTIES, COSTS, POPULATION, POWER PLANTS (ESTABLISHMENTS), MATHEMATICAL MODELS, NUCLEAR WARFARE, COMPUTERS (U)
IDENTIFIERS: DAMAGE ASSESSMENT, REALLOCATION, 1964 (U)

IMPROVEMENT OF PROTECTION DATA BASE FOR DAMAGE ASSESSMENT AND DATA BASE ON SHELTER NEEDS.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-431 063
ARMY NUCLEAR DEFENSE LAB EDGEWOOD ARSENAL MD
ATTENUATION OF FALLOUT RADIATION AS A FUNCTION OF CONCRETE BLOCKHOUSE WALL THICKNESS, (U)
OCT 63 103P SCHMOKE,MURRAY A. ;
REXROAD,RALPH E. ;
MONITOR: NDL TR43

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*RADIOACTIVE FALLOUT, SHELTERS), (*SHELTERS, RADIOACTIVE FALLOUT), THICKNESS, CONCRETE, CONSTRUCTION, CIVIL DEFENSE SYSTEMS, MODELS (SIMULATIONS), SHIELDING, RADIATION MONITORS, DOSE RATE (U)
IDENTIFIERS: 1963 (U)

THIS EXPERIMENT WAS CONDUCTED TO VERIFY THEORETICAL CALCULATIONS OF WALL THICKNESS EFFECT ON THE SHIELDING CHARACTERISTICS OF A CONCRETE BLOCKHOUSE IN A UNIFORMLY CONTAMINATED FALLOUT FIELD. TWO GAMMA EMITTERS, COBALT 60 AND CESIUM 137, WERE USED TO SIMULATE UNIFORM PLANES OF CONTAMINATION. THE DOSE RATES AT VARIOUS LOCATIONS WITHIN BLOCKHOUSES WITH WALL THICKNESS OF 48 PSF, 93.7 PSF, AND 139 PSF WERE MEASURED WITH IONIZATION-CHAMBER DOSIMETERS. REDUCTION FACTORS WERE CALCULATED FROM THE DATA TAKEN AT THE CENTER DETECTOR POSITIONS AND COMPARED WITH REDUCTION FACTORS COMPUTED FROM THE THEORETICAL CALCULATIONS OF NATIONAL BUREAU OF STANDARDS. EXPERIMENTAL AND THEORETICAL REDUCTION FACTORS 3 FEET AND 6 FEET ABOVE THE CENTER OF THE CONCRETE BLOCKHOUSE AGREED WITHIN ±15% FOR A UNIFORMLY CONTAMINATED PLANE OF COBALT 60, AND WITH ±20% FOR CESIUM 137. COBALT 60 AND CESIUM 137 RADIATION SHOW APPROXIMATELY EXPONENTIAL ATTENUATION OF DOSE RATE AS A FUNCTION OF WALL THICKNESS RANGING FROM 48 TO 139 PSF FOR DETECTOR HEIGHTS OF 0 (GROUND LEVEL), 3, AND 6 FEET. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-431 273
OPERATIONS RESEARCH INC SILVER SPRING MD
EVALUATION OF CIVIL DEFENSE SYSTEMS. SHELTER UTILIZATION POLICIES IN MONTGOMERY COUNTY, MARYLAND, (U)
JAN 64 95P PARENT:S. R. ILIPPS,R. D. &
REPT. NO. 236
CONTRACT: OCD OS62 187

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*CIVIL DEFENSE SYSTEMS, ANALYSIS), (*SHELTERS, OPERATION), POPULATION, DESIGN, CONSTRUCTION, PROTECTIVE COVERINGS, FEASIBILITY STUDIES (U)
IDENTIFIERS: OVER CROWDING (U)

ALTHOUGH THE EVALUATIONS ARE MADE ON THE POLICIES APPLYING SPECIFICALLY TO MONTGOMERY COUNTY, SOME GENERAL CONCLUSIONS MAY BE MADE REGARDING THE APPLICATION OF THE POLICIES AND THEIR PROBABLE EFFECTS IN ANY AREA. AN OVERRIDING INTERACTION, WHICH IS EVIDENT AT THIS POINT, IS THAT GENERALLY THE ACQUISITION OF ADDITIONAL SUITABLE SHELTER SPACE INCREASES THE ADVANTAGES OF ASSIGNMENT PLANNING AND DECREASES THE ADVANTAGES OF OVERCROWDING. TABLE 3 PRESENTS THESE GENERAL CONCLUSIONS IN THE FORM OF A BINARY GOOD OR BAD. ALSO PRESENTED WITH THE CONCLUSIONS ARE SEVERAL BRIEF STATEMENTS REGARDING THE DECISIONS AND CONSIDERATIONS AS THEY ARE NOW UNDERSTOOD. IN SOME CASES, GENERAL KNOWLEDGE IS NOT SUFFICIENT TO SUPPORT A CONCLUSION; THIS IS TO BE EXPECTED IN INITIAL STUDIES OF THIS NATURE. HOWEVER, IT IS FELT THAT THESE CONCLUSIONS SERVE A HEURISTIC PURPOSE AND MAY BE A FOUNDATION FOR MORE UNIVERSAL POLICY EVALUATION. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-431 930
WESTERN REGIONAL RESEARCH LAB ALBANY CALIF
BULGUR WAFER AND ADJUNCTS FOR FALLOUT SHELTER RATIONS. (U)
DESCRIPTIVE NOTE: REPT. FOR JUL 62-JUN 63,
DEC 63 79P SHEPHERD,ALLAN D. ;
BEAVERS,DARRELL V. ;FERREL,ROBERT E. ;
HORVAT,ROBERT J. ;NG,HAWKINS ;
CONTRACT: OCD OS62 54

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*RADIOACTIVE FALLOUT, SHELTERS), (*SHELTERS, FOOD); (*FOOD, CIVIL DEFENSE SYSTEMS); WHEAT, DEHYDRATED FOODS, COSTS, STORAGE, STABILITY, DEGRADATION, ENVIRONMENTAL TESTS, ODORS, CHEMICAL ANALYSIS, CHROMATOGRAPHIC ANALYSIS, TASTE, PACKING MATERIALS, VAPORS (U)
IDENTIFIERS: 1963, WAFERS (U)

BULGUR WAFER AND ADJUNCTS FOR FALLOUT SHELTER RATIONS.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-431 995
RESEARCH TRIANGLE INST DURHAM N C
1115A - ANALYSIS OF SURVEY DATA. (U)
DESCRIPTIVE NOTE: FINAL SUMMARY REPT.,
FEB 64 13P HILL,E. L. ;GROGAN,W. K.
;LYDAY,R. O. ;NORMENT,H. G. ;
REPT. NO. OU81
CONTRACT: OCD OS62 144

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*RADIOACTIVE FALLOUT, SHELTERS), (*EXPERIMENTAL DATA, RELIABILITY), ANALYSIS, ERRORS, PROGRAMMING (COMPUTERS), URBAN AREAS, CIVIL DEFENSE SYSTEMS, OPERATIONS RESEARCH (U)
IDENTIFIERS: 1964 (U)

A REVIEW IS PRESENTED OF THE NATIONAL FALLOUT SHELTER SURVEY FINDINGS TO ESTIMATE PROBABLE ERROR, OR RELIABILITY IN THE LIGHT OF EXISTING EXPERIMENTAL DATA AND THEORETICAL CONSIDERATIONS. IN CONSULTATION WITH THE SUBCOMMITTEE ON SHIELDING OF THE ADVISORY COMMITTEE ON CIVIL DEFENSE, CATEGORIZE THE SURVEYED STRUCTURES WITH RESPECT TO TECHNICAL SHIELDING CHARACTERISTICS, AND EVALUATE THE FEASIBILITY AND IMPORTANCE OF DEVELOPING SPECIAL COMPUTATIONAL PROGRAMS FOR THE SEVERAL CATEGORIES DETERMINED. EVALUATE NEW INFORMATION ON SHIELDING FOR APPLICATION TO THE COMPUTATION OF PROTECTION FACTORS FOR SURVEYED STRUCTURES. ACCOMPLISH REPROGRAMMING OR ADDITIONAL PROGRAMMING OF COMPUTATIONAL PROCEDURES FOR ANALYSIS OF THE SURVEY DATA. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-432 335
RAND CORP SANTA MONICA CALIF
A CASE FOR SURVIVAL DEEP UNDERGROUND. (U)
MAR 61 IV BRODE,H. L. ;O'SULLIVAN,J. J.

REPT. NO. P2263

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE; IN COOPERATION WITH MITRE CORP., BEDFORD, MASS.

DESCRIPTORS: (*UNDERGROUND STRUCTURES, SHELTERS), (*ENVIRONMENTAL TESTS, UNDERGROUND STRUCTURES), CIVIL DEFENSE SYSTEMS, SURVIVAL, SHOCK RESISTANCE, DESIGN, CONSTRUCTION (U)
IDENTIFIERS: 1961 (U)

A CASE FOR SURVIVAL DEEP UNDERGROUND IS PRESENTED.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-439 251
GEORGIA UNIV ATHENS PSYCHOLOGICAL LABS
SHELTER OCCUPANCY STUDIES AT THE UNIVERSITY OF GEORGIA, 1962-1963. (U)
DESCRIPTIVE NOTE: FINAL REPT.
169P HAMMES,JOHN A. OSBORNE,R.
TRAVIS ;
CONTRACT: OCD OS 62 226
TASK: 1521A

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*SHELTERS, CIVIL DEFENSE SYSTEMS), RADIOACTIVE FALLOUT, SURVIVAL, MODELS (SIMULATIONS), INSTRUMENTATION, DESIGN, TEST METHODS, CONTROLLED ATMOSPHERES, TEMPERATURE, HUMIDITY, FOOD, WATER SUPPLIES, BEHAVIOR, NUTRITION, BLOOD ANALYSIS, ADJUSTMENT (PSYCHOLOGY), EXCRETION (U)

A DETAILED REPORT IS PRESENTED OF A SERIES OF TESTS ON THE HABITABILITY OF FALLOUT SHELTERS AS PRESENTLY STOCKED IN ACCORDANCE WITH THE NATIONAL SHELTER PROGRAM. THESE STUDIES SURPASSED IN AUSTERITY ALL PREVIOUS SHELTER RESEARCH USING CIVILIANS. MEN, WOMEN, AND CHILDREN, AGE 7-70 YEARS, PARTICIPATED IN TWO-WEEK CONFINEMENT TESTS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-439 332
TECHNICAL OPERATIONS INC BURLINGTON MASS
PROTECTION FACTORS OF EMERGENCY SHELTERS IN A BRITISH RESIDENCE, (U)
NOV 63 75P VELLETRI,JOSEPH D. ;
YORK,NANCY-RUTH ;BATTER,JOHNF. ;
REPT. NO. B63 41
CONTRACT: OCD OS62 14
TASK: 1111A

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*RADIOACTIVE FALLOUT, SHELTERS), (*CIVIL DEFENSE SYSTEMS, RADIOACTIVE FALLOUT), MODELS(SIMULATION), CONSTRUCTION, EFFECTIVENESS, INSTRUMENTATION, RADIATION MONITORS, RADIOLOGICAL CONTAMINATION, BUILDINGS, DOSE RATE, EXPERIMENTAL DATA, GREAT BRITAIN, TEST METHODS (U)

THE CHECK (1) THE VALIDITY OF THE FALLOUT PROTECTION FACTOR CALCULATIONS FOR RESIDENTIAL STRUCTURES GIVEN IN BRITISH HOME OFFICE AND U.S. OCD ENGINEERING MANUALS AND (2) THE VALIDITY OF RADIATION SCALE MODELING. THE UNITED STATES AND THE UNITED KINGDOM IN A JOINT EFFORT TESTED ONE FULL-SCALE TYPICAL RESIDENCE (100 PSF EXTERIOR WALLS) AND TWO MODELS THEREOF (50 AND 100 PSF EXTERIOR WALLS). EACH HOUSE WAS TESTED EMPTY AND WITH VARIOUS SHELTER CONFIGURATIONS INSTALLED. FALLOUT CONTAMINATION WAS SIMULATED BY PUMPING A MULTICURIE ENCAPSULATED COBALT-60 SOURCE THROUGH PLASTIC TUBING SURROUNDING THE HOUSES. THE UNITED STATES CALCULATIONS AGREE WITH MEASURED DOSE RATES IN THE 50-PSF WALL HOUSE, WHILE BRITISH CALCULATIONS ARE SLIGHTLY LOWER. AGREEMENT BETWEEN DOSE RATES MEASURED IN THE 100-PSF WALL FULL-SCALE AND MODEL HOUSES WAS GOOD AT LOCATIONS AWAY FROM APERTURES. FULL-SCALE AND MODEL EXPERIMENTAL RESULTS ARE GENERALLY CONSISTENT WITH BOTH BRITISH AND U.S. CALCULATIONS, WHICH SHOW A RECTANGULAR SHELTER TO OFFER MAXIMUM PROTECTION. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-439 396
GEORGIA UNIV ATHENS PSYCHOLOGICAL LABS
SHELTER OCCUPANCY STUDIES AT THE UNIVERSITY OF GEORGIA, 1962-1963. (U)
DESCRIPTIVE NOTE: FINAL SUMMARY REPT.
DEC 63 12P HAMMES,JOHN A. ;
CONTRACT: OCD OS62 226
TASK: 1521A

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*SHELTERS, CIVIL DEFENSE SYSTEMS), TESTS, RADIOACTIVE FALLOUT, SURVIVAL, TESTS, HUMAN ENGINEERING, CONSTRUCTION, FOOD, WATER SUPPLIES, SANITARY ENGINEERING, BEHAVIOR, MANAGEMENT PLANNING, ADJUSTMENT (PSYCHOLOGY) (U)

DURING 1962 AND 1963 THE UNIVERSITY OF GEORGIA PSYCHOLOGICAL LABORATORIES CONDUCTED A SERIES OF TESTS ON THE HABITABILITY OF FALLOUT SHELTERS AS PRESENTLY STOCKED IN ACCORDANCE WITH THE NATIONAL SHELTER PROGRAM. THESE STUDIES SURPASSED IN AUSTERITY ALL PREVIOUS SHELTER RESEARCH USING CIVILIANS. MEN, WOMEN, AND CHILDREN, AGE 7 - 70 YEARS, PARTICIPATED IN TWO-WEEK CONFINEMENT TESTS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-439 633
TECHNICAL OPERATIONS INC WASHINGTON D C
PROTECTION FACTORS OF EMERGENCY SHELTERS IN A BRITISH RESIDENCE. (U)
DESCRIPTIVE NOTE: SUMMARY RESEARCH REPT.
FEB 64 4P BARRETT,M. J. ;
CONTRACT: OCD OS62 14

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*SHELTERS, GREAT BRITAIN), (*PROTECTIVE COVERINGS, SHELTERS), (*CIVIL DEFENSE SYSTEM, OPERATION), DESIGN, POPULATION, THEORY, STRUCTURES, RADIATION EFFECTS, STEEL, RADIOACTIVE FALLOUT, INSTRUMENTATION, TABLES (U)
IDENTIFIERS: EMERGENCY SHELTERS, FALLOUT PROTECTION (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-446 445
BATTELLE MEMORIAL INST COLUMBUS OHIO
METHODS FOR DISPOSING OF EXCESS SHELTER HEAT, (U)
AUG 64 108P HUMMELL,JOHN D. ;
BEARINT,DAVID E. ;FLANIGAN,LAWRENCE J. ;
CONTRACT: OCD OS62 191

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*SHELTERS, COOLING), (*COOLING & VENTILATING EQUIPMENT, SHELTERS), CIVIL DEFENSE SYSTEMS, AIR COOLED, LIQUID COOLED, HEAT EXCHANGERS, HEAT SINKS, REFRIGERATION SYSTEMS, DESIGN, COSTS, HUMIDITY, VAPORS, ABSORPTION, COMPRESSION, RADIATION DAMAGE, MATERIALS, FUELS, MAINTENANCE, AIR CONDITIONING EQUIPMENT, ICE, FEASIBILITY STUDIES (U)

TECHNICAL AND ECONOMIC DATA WERE DEVELOPED IN THREE CATEGORIES: HEAT SINKS, MISCELLANEOUS COOLING-SYSTEM COMPONENTS, AND REFRIGERATION AND DEHUMIDIFICATION DEVICES. VARIOUS COMBINATIONS WERE CONSIDERED AS ASSEMBLED INTO COOLING SYSTEMS AND THESE SYSTEMS WERE THEN EVALUATED WITH RESPECT TO THEIR COST EFFECTIVENESS IN REMOVING EXCESS SHELTER HEAT. SPECIAL ATTENTION WAS GIVEN TO THE CONCEPTION OF APPLICABLE NEW COOLING SYSTEMS. A COMPARISON IS ALSO MADE OF THE ADVANTAGES, DISADVANTAGES, AND ESTIMATED COSTS ASSOCIATED WITH VARIOUS CONVENTIONAL AND NOVEL SYSTEMS. AREAS OF NEEDED RESEARCH ARE DEFINED FOR THE DEVELOPMENT OF NOVEL SYSTEMS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-450 224
NAVAL CIVIL ENGINEERING LAB PORT HUENEME CAL'F
HEAT DISSIPATION FROM ABOVE GROUND SHELTERS, (U)
SEP 64 53P STEPHENSON,J. M. I
REPT. NO. NCEL-TN-634
PROJ: Y F011 05 02 341

UNCLASSIFIED REPORT

DESCRIPTORS: (*SHELTERS, COOLING + VENTILATING EQUIPMENT), RADIOACTIVE FALLOUT, DESIGN, CONSTRUCTION, HEAT TRANSFER, STRUCTURES, THERMAL CONDUCTIVITY, ANALYSIS, SYSTEMS ENGINEERING, CIVIL DEFENSE SYSTEMS (U)

ABOVE GROUND STRUCTURES WHICH HAVE BEEN OFFICIALLY DESIGNATED AS FALLOUT SHELTERS POSE A NUMBER OF VENTILATION PROBLEMS WHICH REQUIRE ATTENTION TO INSURE THAT THE THERMAL ENVIRONMENT OF THE PROTECTED AREA WILL BE HABITABLE. THE VARIOUS MATERIALS AND CONFIGURATIONS OF THE STRUCTURES AND T;E EFFECT OF SOLAR RADIATION REQUIRES THAT THE HEAT TRANSFER THROUGH WALLS AND OTHER SURFACES BE CONSIDERED SEPARATELY. TO PROVIDE HEAT TRANSFER DATA FOR THOSE STRUCTURES WHICH ARE OF THICK WALL CONSTRUCTION, A WIDELY ACCEPTED ANALYTICAL SOLUTION WAS PROGRAMMED FOR THE 1620 COMPUTER. A MODIFIED PSYCHROMETRIC CHART WAS D VELOPED SO THE SENSIBLE HEAT FACTOR TECHNIQUE CAN BE USED TO DETERMINE VENTILATION REQUIREMENTS FOR ABOVE GROUND SHELTERS SUBJECTED TO UNUSUAL CLIMATIC CONDITIONS. SAMPLE CALCULATIONS FOR A BOOMAN SHELTER LOCATED IN ST. LOUIS, MISSOURI SHOW THAT THE MAXIMUM HEAT GAIN THROUGH THE THICK WALLS IS ONLY 1.79% OF THE HUMAN LOAD AND THE HEAT LOSS THROUGH THE FLOOR IS 3.33% OF THE HUMAN LOAD. THE PEOPLE IN THIS CASE CONTRIBUTE ALMOST THE ENTIRE NET HEAT LOAD. CONTINUED WORK ON THIS TASK IS DIRECTED TOWARD THE ACCUMULATION OF MORE DATA ON HEAT TRANSFER THROUGH WALLS OF HEAVY CONSTRUCTION, AND HEAT LOSS THROUGH THE FLOOR. FURTHER MODIFICATIONS TO THE PSYCHROMETRIC CHART MAY BE NEEDED AND THE INSIDE DESIGN CONDITIONS ARE TO BE INVESTIGATED WITH RESPECT TO COMFORT VS. ECONOMY. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-450 737
DIRECTOR OF ENGINEERING AND INDUSTRIAL SERVICES E..EWOOD ARSENAL MD
COST ESTIMATES FOR PROVIDING BIOLOGICAL AGENT PROTECTION TO FALLOUT SHE TERS, (U)
OCT 64 57P PE:TY,JOHN B. ,III;
BROOKS,WILLIAM L. ;
REPT. NO. 1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*BIOLOGICAL WARFARE, SHELTERS), (*SHELTERS, COSTS), (*CIVIL DEFENSE SYSTEMS, BIOLOGICAL WARFARE), DECONTAMINATION, COOLING & VENTILATION EQUIPMENT, AIR INTAKE FILTERS, BUILDINGS, UNDERGROUND STRUCTURES, CONTROLLED ATMOSPHERES, PRESSURE, CONSTRUCTION, FEASIBILITY STUDIES (U)

THIS REPORT DISCUSSES A COST ESTIMATE FOR PROVIDING BIOLOGICAL AGENT PROTECTION IN 50 MILLION EXISTING FALLOUT SHELTERS AND FOR 100 MILLION SPACES PLANNED FOR FUTURE CONSTRUCTION. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-458 314
IIT RESEARCH INST CHICAGO ILL
STRUCTURAL COST STUDIES FOR HARDENED SHELTERS (500-MAN AND 1000-MAN CAPACITIES). (U)
DESCRIPTIVE NOTE: FINAL REPT.,
JAN 65 IV HAVERS, JOHN A. ;
LUKES, JERRY J. ;
PROJ: M6064 ;
TASK: 1152E

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPORT ON TOTAL SHELTER DESIGN OPTIMIZATION.

DESCRIPTORS: (*SHELTERS, COSTS), UNDERGROUND STRUCTURES, CIVILIAN DEFENSE SYSTEMS, STRUCTURAL PROPERTIES, DESIGN, CONFIGURATION, OPTIMIZATION, DETERMINATION, CONSTRUCTION, MATERIALS, STEEL, CONCRETE, WOOD, REINFORCED CONCRETE, HARDENING (U)

APPLYING THE COST AND DESIGN RELATIONSHIPS DEVELOPED IN AN EARLIER STUDY, THE IN-PLACE STRUCTURAL COSTS OF 500-MAN AND 1000-MAN CAPACITY FULLY-BURIED SHELTERS WERE IDENTIFIED AS FUNCTIONS OF STRUCTURAL MATERIAL, STRUCTURAL SYSTEM, SHELTER CONFIGURATION, AND DESIGN LEVEL OF LOADING. BY COMBINING THE OPTIMA OF THESE DESIGNS, MINIMUM-STRUCTURAL-COST RELATIONSHIPS WERE DEVELOPED FOR 100-MAN, 500-MAN AND 1000-MAN CAPACITY SHELTERS AS FUNCTIONS OF OVERPRESSURE LEVEL. THE RANGE OF INTEREST, AS IN THE EARLIER STUDY, INCLUDED 10 PSI TO 200 PSI OVERPRESSURES PRODUCED BY NUCLEAR YIELDS OF ONE MT TO 100 MT. ONCE DESIGN OVERPRESSURES HAVE INCREASED TO SOME UNSPECIFIED LEVEL, THE ABSOLUTE MAGNITUDE OF WHICH DECREASES AS SHELTER DESIGN CAPACITY IS INCREASED, IT IS FOUND THAT PER OCCUPANT STRUCTURAL COSTS ARE RELATIVELY INSENSITIVE TO INCREASING APPRECIABLY, ALTHOUGH AT A DECREASING RATE, AS SHELTER DESIGN CAPACITY IS INCREASED. FINALLY, THE ECONOMIC IMPORTANCE OF IDENTIFYING THE MINIMUMCOST STRUCTURAL DESIGN FOR EACH PROPOSED SHELTER APPLICATION IS EMPHASIZED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-461 858
MRD DIV GENERAL AMERICAN TRANSPORTATION CORP NILES ILL
ANALYSIS OF ABOVEGROUND FALLOUT SHELTER VENTILATION REQUIREMENTS. (U)
DESCRIPTIVE NOTE: FINAL REPT., JUN 63-AUG 64,
DEC 64 IV BASCHIERE,R. J. ;
LOKMANHEKIM,M. ;MOY,M. C. ;
REPT. NO. MRD-1240-1
CONTRACT: OCD OS63 176

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*SHELTERS, VENTILATION), CIVIL DEFENSE SYSTEMS, RADIOACTIVE FALLOUT, GEOMETRIC FORMS, DESIGN, CONSTRUCTION, ENVIRONMENTAL TESTS, TEMPERATURE, HEAT, ANALYSIS, FLUID FLOW, MEASUREMENT, VELOCITY, MATHEMATICAL PREDICTION, EQUATIONS, MATHEMATICAL ANALYSIS (U)

TRANSIENT AND STEADY ANALYSIS ARE USED TO DETERMINE THE PSYCHROMETRIC CONDITIONS THAT DEVELOP IN LARGE ABOVEGROUND FALLOUT SHELTERS VENTILATED WITH UNCONDITIONED AMBIENT AIR. THESE ANALYSES CONSIDER THE SHELTER SIZE, GEOMETRY AND CONSTRUCTION, THE PSYCHROMETRIC CONDITION OF THE AMBIENT WEATHER, AND THE VARIOUS METABOLIC AND NONMETABOLIC HEAT LOADS TO THE SHELTER AIR. THE RESULTS OF THIS STUDY INDICATE THAT DURING THE HOT SUMMER WEATHER, ONLY A SMALL FRACTION OF THE TOTAL ENERGY INPUT TO THE SHELTER IS LOST THROUGH THE SHELTER BOUNDARY SURFACES. THUS, THE VENTILATION REQUIREMENTS FOR LARGE ABOVEGROUND SHELTERS CAN BE OBTAINED BY THE USE OF AN ANALYSIS WHICH NEGLECTS THE HEAT LOSS THROUGH THE SHELTER BOUNDARIES. THIS MEANS THAT ABOVEGROUND SHELTER VENTILATION SYSTEMS SHOULD BE DESIGNED TO REMOVE THE ENTIRE THERMAL LOAD GENERATED WITHIN THE SHELTER. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-600 064
GEORGIA UNIV ATHENS PSYCHOLOGICAL LABS
SHELTER OCCUPANCY STUDIES AT THE UNIVERSITY OF GEORGIA 1962-1963. (U)
DESCRIPTIVE NOTE: APPENDICES TO FINAL REPT.
DEC 63 262P
CONTRACT: OCD OS62 226

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*SHELTERS, SURVIVAL), (*CONFINEMENT (PSYCHOLOGY), SHELTERS), CIVIL DEFENSE SYSTEMS, REACTION (PSYCHOLOGY), PSYCHOPHYSIOLOGY, PHYSICAL FITNESS, TRAINING, MEDICAL EXAMINATION, UNIVERSITIES, STRESS (PSYCHOLOGY) (U)

PSYCHOLOGICAL EFFECTS OF SHELTER OCCUPANCY.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-600 065
GAUTNEY AND JONES COMMUNICATIONS INC WASHINGTON, D C
STUDY AND DEVELOPMENT OF SPECIFICATIONS FOR PROTOTYPE TRANSMITTERS AND RECEIVERS FOR FALLOUT SHELTER COMMUNICATIONS SYSTEMS. (U)
DESCRIPTIVE NOTE: FINAL REPT.
MAY 64 71P
REPT. NO. TGGM642

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*SHELTERS, COMMUNICATION SYSTEMS), (*COMMUNICATION SYSTEMS, SHELTERS), CIVIL DEFENSE SYSTEMS, TRANSMITTER-RECEIVERS, RADIO EQUIPMENT, COSTS, SPECIFICATIONS (U)

A STUDY APPROACH TO THE PROBLEM OF DEVELOPING SPECIFICATIONS FOR EQUIPMENT FOR A RADIO BACKUP TO A LANDLINE FALLOUT SHELTER COMMUNICATIONS SYSTEM IS DESCRIBED. CONSIDERATION IS GIVEN THOSE ASPECTS OF SHELTER PROGRAM WHICH CONTRIBUTE REQUIREMENTS FOR ELECTRICAL PERFORMANCE OF THE EQUIPMENTS. DISCUSSIONS ARE INCLUDED CONCERNING FREQUENCY AVAILABILITY AND USAGE, COST ANALYSIS, STATE OF THE ART, AND RECOMMENDATIONS. THE REPORT INCLUDES FULL SPECIFICATIONS FOR THREE TYPES OF RADIO EQUIPMENT. A RADIO BACKUP TO A LANDLINE COMMUNICATIONS SYSTEM WAS FOUND TO BE TECHNICALLY FEASIBLE. A SUBSTANTIAL SAVINGS IN COSTS RELATIVE TO THAT OF PRESENTLY AVAILABLE COMMERCIAL RADIO EQUIPMENT CAN BE REALIZED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-600 261
FACTORY MUTUAL RESEARCH CORP NORWOOD MASS
FIRE HAZARD TO FALLOUT SHELTER OCCUPANTS. A CLASSIFICATION GUIDE. (U)
DESCRIPTIVE NOTE: FINAL RESEARCH REPT.
APR 64 40P SMITH,J. B.;COUSINS,E. W.;
NEWMAN,R. M.;
REPT. NO. FMRC15328
TASK: 1133A

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (•FIRES, SHELTERS), (•SHELTERS, FIRES), HAZARDS, BUILDINGS, STANDARDS, CLASSIFICATION, URBAN AREAS, CIVIL DEFENSE SYSTEMS (U)

THIS CLASSIFICATION GUIDE WAS PREPARED FOR THE USE OF ARCHITECTS AND ENGINEERS. THE GUIDE WAS FIELD-TESTED BY SEVERAL ARCHITECTS AND A CONSULTING ENGINEER. TRIAL SURVEYS WERE MADE AT EXISTING DESIGNATED SHELTERS IN BUILDINGS OF VARIED CONSTRUCTION, OCCUPANCY, AND AGE, IN RELATIVELY CONGESTED AREAS. THE GUIDE WAS FOUND TO BE SIMPLE AND EASY TO USE. CONSISTENT RESULTS WERE OBTAINED. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-600 759
EDISON (THOMAS A) RESEARCH LAB WEST ORANGE N J
ENVIRONMENTAL INSTRUMENT PACKAGE FOR A CIVIL DEFENSE SHELTER. (U)
DESCRIPTIVE NOTE: SUMMARY OF RESEARCH REPT.
MAY 64 6P
CONTRACT: OCD OS62 216
TASK: 1232B

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*HEALTH PHYSICS INSTRUMENTATION), (*CIVIL DEFENSE SYSTEMS, SHELTERS), (*INSTRUMENTATION, ENVIRONMENTAL TESTS), (*ENVIRONMENTAL TESTS, INSTRUMENTATION), AIR POLLUTION, RADIOLOGICAL CONTAMINATION, HAZARDS, SAFETY (U)

AN INSTRUMENT EVALUATION REVEALED DEFICIENCIES IN EVERY DEVICE OF EXISTING EQUIPMENT. RECOMMENDED REVISIONS TO EXISTING EQUIPMENT RELATE TO: (1) INSTRUCTION MATERIAL, (2) SHELF LIFE, (3) AIR SAMPLING, AND (4) NEW INSTRUMENTS. THESE INCLUDE: (1) EFFECTIVE TEMPERATURE INDICATOR, (2) FILAMENT TYPE HYGROMETER, (3) GLASS TUBE FOR OXYGEN, (4) CARBON DIOXIDE DETECTOR, AND (5) EXPOSURE DETECTORS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-600 994
MICHIGAN STATE UNIV EAST LANSING COLL OF COMMUNICATION ARTS
CIVIL DEFENSE BELIEF PATTERNS: (III) FALLOUT SHELTERS AND RADIATION. (U)
DESCRIPTIVE NOTE: COMMUNICATION RESEARCH REPT.
APR 63 81P MACLEAN,MALCOLM S. ,JR.;
DANBURY,THOMAS ;TALBOTT,ALBERT D. ;
CONTRACT: OCD 0562 19

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*ATTITUDES, CIVIL DEFENSE SYSTEMS), (*SHELTERS, ATTITUDES), (*ATTITUDES, RADIOACTIVE FALLOUT), PUBLIC OPINION, APPLIED PSYCHOLOGY, PERSONALITY (U)

A DESCRIPTION AND TABULAR SUMMARY ARE GIVEN OF THE FOUR MAJOR TYPES OF PERSONS ON THE BASIC OF THEIR PATTERNS OF BELIEF ABOUT FALLOUT SHELTERS AND RADIATION. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-601 467
HUGHES AIRCRAFT CO FULLERTON CALIF
OCD SOFT TARGET STUDY. (U)
DESCRIPTIVE NOTE: FINAL REPT.
APR 64 213P
REPT. NO. FR-64-16-66
CONTRACT: OCD OS62 277

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*CIVIL DEFENSE SYSTEMS, EFFECTIVENESS), SHELTERS, NUCLEAR EXPLOSION DAMAGE, NUCLEAR WARFARE CASUALTIES, RADIATION EFFECTS, COSTS, PROGRAMING (COMPUTERS), COMPUTERS (U)

THIS REPORT DESCRIBES METHODOLOGY AND ORIGINAL COMPUTER PROGRAMS WHICH HAVE BEEN DEVELOPED TO ASSIST IN THE ACCOMPLISHMENT OF THE STUDY OBJECTIVE. TWO COMPUTER PROGRAMS ARE EMPHASIZED. THE DYNAMIC ANALYZER PROGRAM CALCULATES THE EFFECTIVENESS OF SPECIFIED SHELTER SYSTEMS IN PROTECTING THE POPULATION FROM PARTICULAR ATTACKS. POPULATION MOBILITY AND FALLOUT FIELDS WHICH DEPEND ON BOTH TIME AND POSITION ARE CONSIDERED. THE WEIGHTED-STRATEGY, MULTIPLE SHELTER TYPE MIX AND LOCATION OPTIMIZER COMPUTES THE OPTIMAL EFFECTIVENESS VERSUS COST CURVE OVER THE RANGE FROM ZERO COST TO THE COST OF THE MOST EFFECTIVE SYSTEM POSSIBLE WITH A GIVEN SHELTER CATALOG. THIS PROGRAM ALSO DETERMINES THE MIX AND DEPLOYMENT OF SHELTERS AT DESIRED COST/EFFECTIVENESS LEVELS. SOFT TARGET STUDY ACTIVITY HAS SHOWN THAT THERE IS A DIFFERENCE IN THE INTENSITY AND RELATIVE INTENSITY OF THE DIFFERENT WEAPON EFFECTS FOR CITIES NEAR SOFT AND HARD TARGETS. HOWEVER, ALL WEAPON EFFECTS NEED TO BE CONSIDERED FOR BOTH CASES. THE SIGNIFICANCE OF THIS FACT IS THAT THE PROCEDURES DEVELOPED UNDER THE SOFT TARGET STUDY MAY BE APPLIED TO THE STUDY OF CIVIL DEFENSE COUNTERMEASURES FOR CITIES IN ANY TARGETING SITUATION. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-602 846
HUDSON INST INC HARMON-ON-HUDSON N Y
ON SHELTER COSTS, (U)
DESCRIPTIVE NOTE: FINAL REPT.,
JUN 64 22P KRUPKA,ROBERT A. ;
REPT. NO. 361-RR/3
CONTRACT: OCD OS63 122
TASK: 4113D

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*SHELTERS, COSTS), FUNCTIONS, ANALYSIS, BLAST, DESIGN, OPTIMIZATION, CIVIL DEFENSE SYSTEMS (U)

STUDIES ON OPTIMIZING BLAST SHELTER PROGRAMS REVEALED THAT A SHELTER COST-HARDNESS RELATIONSHIP IS REQUIRED IN ORDER TO DESIGN PROGRAMS AND MEASURE THEIR PERFORMANCE. THE PAPER PRESENTS THE RESULTS OF A LIMITED EFFORT TO DEVELOP A SIMPLE COST FUNCTION FOR BLAST SHELTERS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-602 847
HUDSON INST INC HARMON-ON-HUDSON N Y
ALTERNATIVE CIVIL DEFENSE PROGRAMS AND POSTURES. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
JUN 64 38P BROWN,WILLIAM M. I
REPT. NO. 361-RR/1
CONTRACT: OCD 0563 122
TASK: 4113D

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*SHELTERS, DESIGN), (*CIVIL DEFENSE SYSTEMS, THEORY), (*MILITARY STRATEGY, GAME THEORY), WARFARE, POLITICAL SCIENCE, BLAST, RADIOACTIVE FALLOUT, BUDGETS, TABLES (U)

A SPECTRUM OF POSSIBLE CD PROGRAMS IS PRESENTED RANGING FROM A MINIMUM (APPROXIMATELY THE CURRENT SURVEY SHELTER PROGRAM) BASED ON A $200 MILLION BUDGET TO A MAXIMUM SUSTAINED NATIONAL EFFORT, LIMITED ONLY BY AVAILABLE RESOURCES. TO PLACE THESE ALTERNATIVES IN PERSPECTIVE, SOME ASPECTS OF FUTURE CONTEXTS WITHIN WHICH THEY MIGHT APPEAR DESIRABLE ARE DESCRIBED. SEVEN SPECIFIC POSTURES ARE SELECTED AND DESCRIBED IN TERMS OF THE FALLOUT AND BLAST PROTECTION ACHIEVED PRIOR TO AN ATTACK. THE TWO MAIN CONCLUSIONS DRAWN ARE (1) THAT IN SOME POPULATION ATTACKS THE EMERGENCY IMPROVEMENTS IN CD CAPABILITY WITHIN THE LOW BUDGET PROGRAMS HAVE A POTENTIAL FOR PRESERVING THE NATION AS AN ENTITY AND/OR MOST OF ITS URBAN POPULATION; AND (2) THAT THE LARGER PROGRAMS, BASED UPON BLAST SHELTERS IN OR NEAR THE URBAN AREAS, WHEN PROPERLY DESIGNED OFFER A MUCH GREATER POTENTIAL FOR SURVIVAL OF MALEVOLENT ATTACKS THAN HAS BEEN GENERALLY REALIZED HERETOFORE. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-602 848
HUDSON INST INC HARMON-ON-HUDSON N Y
OVERCROWDING POTENTIAL. (U)
DESCRIPTIVE NOTE: FINAL REPT.
JUN 64 30P KRUPKA,ROBERT A.
REPT. NO. 361-RR/4
CONTRACT: OCD OS63 122
TASK: 4113D

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*SHELTERS, PERFORMANCE (ENGINEERING)), DESIGN, OPTIMIZATION, SURVIVAL, COSTS, VOLUME, WATER SUPPLIES, STRESS (PHYSIOLOGY), STRESS (PSYCHOLOGY), CIVIL DEFENSE SYSTEMS, HUMAN ENGINEERING (U)

THE PAPER EXPLORES SOME POSSIBILITIES OF INCREASING BLAST SHELTER PERFORMANCE (LESS COST, MORE HARDNESS, OR BOTH) BY USING SHELTER SPACE BEYOND DESIGN CAPACITY. IT SUGGESTS THAT SHELTERS MIGHT REASONABLY BE OVERCROWDED 150% (6 PEOPLE IN 2 SHELTER SPACES) FOR EXTENDED PERIODS AND THAT MORE SEVERE OPTIONS ARE POSSIBLE FOR SHORTER PERIODS. THE STUDY GIVES SOME BACKGROUND INFORMATION SHOWING THAT SHELTER DESIGNERS HAVE RADICALLY REDUCED SPACE ALLOCATIONS DURING THE PAST FEW YEARS. AN EXAMPLE OF OVERCROWDING PERFORMANCE IS INCLUDED. THE PAPER ALSO SUGGESTS THAT PHYSIOLOGICAL STRESS (HEAT, HUMIDITY, LACK OF WATER, ETC.) RATHER THAN PSYCHOLOGICAL STRESS IS ALWAYS USED AS THE LIMITING FACTOR IN THE UTILIZATION OF SHELTER SPACE AND THAT THE PROBLEM CAN ESSENTIALLY BE BY-PASSED BY FURNISHING SHELTERS WITH WATER WELLS. OVERCROWDING BE GIVEN SERIOUS CONSIDERATION IN DEVELOPING SHELTER PROGRAMS, SINCE IT MAY RESULT IN OVER-ALL COST REDUCTIONS, PURCHASE OF HARDER SYSTEMS, FAST CAPABILITIES, HIGHER LEGACY VALUES, OPTIMUM PHASING OF PROGRAMS, OR A COMBINATION OF THESE. SYSTEMS USING WELL WATER AND DESIGNED FOR OVERLOADING INCUR SMALL INCREASES OVER NORMAL SHELTER COSTS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-602 850
HUDSON INST INC HARMON-ON-HUDSON N Y
THE DESIGN AND PERFORMANCE OF *OPTIMUM* BLAST SHELTER PROGRAMS. (U)
DESCRIPTIVE NOTE: FINAL REPT.
JUN 64 53P BROWN,WILLIAM M. ;
REPT. NO. 361-RR/2
CONTRACT: OCD OS63 122
TASK: 41130

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*SHELTERS, COSTS), CIVIL DEFENSE SYSTEMS, MATHEMATICAL MODELS, PERFORMANCE (ENGINEERING), OPTIMIZATION, MILITARY STRATEGY, BLAST, NUCLEAR EXPLOSIONS, POPULATION, URBAN AREAS, DESIGN, EFFECTIVENESS (U)

THE PAPER DEVELOPS A MATHEMATICAL MODEL FROM WHICH THE COST OF A NATIONAL BLAST SHELTER PROGRAM FOR THE 213 URBANIZED AREAS OF THE U.S. CAN BE CALCULATED, AND FROM WHICH THE EFFECTIVENESS OF THE PROGRAM IN PROVIDING BLAST PROTECTION FOR THE URBAN CITIZENS CAN BE QUICKLY FOUND. THE PAPER, BY UTILIZING THE IDEA OF EQUALIZING THE VALUE OF ALL URBAN AREAS AS TARGETS (FROM THE ENEMY POINT OF VIEW), (A) DENIES THE ENEMY ANY PREFERRED TARGETS, FROM THE POINT OF VIEW OF POPULATION MORTALITIES, AND (B) PROVIDES AN IMPORTANT KIND OF EQUALITY OF POPULATION VULNERABILITY AMONG THE URBAN AREAS. FOR ANY GIVEN BUDGET THE FUNDS SPENT FOR PROTECTING A CITIZEN IN A MORE CONGESTED AREA WOULD BE SOMEWHAT GREATER THAN FOR THOSE IN LESS CONGESTED AREAS WHICH, NORMALLY, WOULD BE A LESS LIKELY TARGET, FROM A NATIONAL POINT OF VIEW. IT IS BELIEVED THAT THE DESIGN HAS THE ADVANTAGE OF MINIMIZING THE NUMBER OF BLAST FATALITIES WHICH AN ENEMY CAN ACHIEVE, AND THEREBY CAN CONTRIBUTE TO THE REDUCTION OF NATIONAL VULNERABILITY. TO A LARGE EXTENT THE DESIGN IS INDEPENDENT OF THE SIZE AND NATURE OF THE ASSUMED ATTACK, ALTHOUGH THIS IS LESS TRUE OF THE LATER REFINEMENTS WHICH INVOLVE THE USE OF PARTIAL DISPERSAL AND CROWDING. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-603 068
BATTELLE MEMORIAL INST COLUMBUS OHIO
MINIMUM REQUIREMENTS FOR AUXILIARY POWER SYSTEMS FOR COMMUNITY SHELTERS. (U)
DESCRIPTIVE NOTE: SUMMARY REPT.,
JUL 64 186P TRAYSER,D. A. ;FLANIGAN,L. J. ;TALBERT,S. G. ;
CONTRACT: OCD OS62 190
TASK: 1400

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON SHELTER RESEARCH, COMPONENT DEVELOPMENT, LARGE AUXILIARY POWER SYSTEMS.

DESCRIPTORS: (*SHELTERS, CIVIL DEFENSE SYSTEMS), (*AUXILIARY POWER PLANTS, CIVIL DEFENSE SYSTEMS), DESIGN, INSTALLATION, OPERATION, MAINTENANCE, STARTING, COOLING, FUELS, STORAGE, ENGINE PRIMERS, GAS TURBINES, STEAM POWER PLANTS, DIESEL ENGINES, IGNITION SYSTEMS, NOISE, VIBRATION, EXHAUST GASES, RECOVERY, COSTS, SAFETY, POWER EQUIPMENT (U)

THE RESULTS OF THIS STUDY SHOW THAT THE MINIMUM REQUIREMENTS FOR INSTALLATION, OPERATION, AND MAINTENANCE OF SHELTER AUXILIARY POWER SYSTEMS CAN GENERALLY BE MET WITH COMMERICIALLY AVAILABLE EQUIPMENT NOW IN COMMON INDUSTRIAL USE. TO FACILITATE THE USE OF THE INFORMATION IN THIS REPORT, THE PRESENTATION OF RESULTS IS DIVIDED INTO TEN SECTIONS. THE MATERIAL IN THESE SECTIONS IS SUMMARIZED HERE IN THE SAME SEQUENCE, NAMELY: PRIME MOVERS, STARTING SYSTEMS, COOLING, FUEL STORAGE, WASTE HEAT RECOVERY, POWER TRANSMISSION SYSTEMS, MOUNTINGS AND DRIVES, NOISE AND VIBRATION, STAND-BY MAINTENANCE, AND DEMONSTRATION UNIT. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-607 127
CONESCO INC CAMBRIDGE MASS
DESCRIPTION, EXPERIMENTAL CALIBRATION, AND ANALYSIS OF THE RADIATION TEST FACILITY AT THE PROTECTIVE STRUCTURES DEVELOPMENT CENTER. (U)
DESCRIPTIVE NOTE: TECHNICAL REPT.
SEP 64 76P MCDONNELL,C. ;VELLETRI,J. ; STARBIRD,A. W. ;BATTER,J. F. ;
CONTRACT: DA18 020ENG3096
MONITOR: PSDC . TR14

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: LEGIBILITY OF THIS DOCUMENT IS IN PART UNSATISFACTORY.

DESCRIPTORS: (*SHELTERS, MODELS (SIMULATIONS)), (*RADIOLOGICAL CONTAMINATION, SHELTERS), CALIBRATION, DOSE RATE, DOSIMETERS, RADIATION MONITORS, STEEL, STRUCTURES, CIVIL DEFENSE SYSTEMS, RADIOACTIVE FALLOUT, SHIELDING, INSTRUMENTATION, TEST EQUIPMENT, COBALT, EQUATIONS, GEOMETRIC FORMS, STANDARDIZATION, EXPERIMENTAL DATA (U)

THE INITIAL CALIBRATION EXPERIMENTS PERFORMED AT THE RADIATION TEST FACILITY OF THE PROTECTIVE STRUCTURES DEVELOPMENT CENTER ARE DESCRIBED AND THEIR RESULTS ANALYZED. THE DOSE RATE ABOVE AN OPEN FIELD AND THE ATTENUATION AFFORDED BY THE STEEL FRAME OF THE TEST STRUCTURE IS CALCULATED AND FOUND TO AGREE WELL WITH EXPERIMENT WHEN MODIFIED CALCULATIONAL PROCEDURES ARE USED. THE CUMULATIVE ANGULAR DISTRIBUTION OF DIRECT RADIATION IS FOUND TO BE AS MUCH AS FOURTEEN PERCENT ABOVE THAT PREDICTED BY THEORY OVER THE RANGE INVESTIGATED. SEVERAL MODIFICATIONS OF PRESENTLY USED CALCULATIONAL TECHNIQUES ARE SUGGESTED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-609 480
AMERICAN INST FOR RESEARCH PITTSBURGH PA
OCCUPANCY EXERCISE RESEARCH GUIDE: AN INTRODUCTION TO THE RESEARCH USE OF THE SHELTER EXERCISE FOR TRAINING. (U)
OCT 64 29P
CONTRACT: OCD OS63 97
TASK: 15;7A

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*CIVIL DEFENSE SYSTEMS, TRAINING), (*SHELTERS, MANAGEMENT ENGINEERING), (*TRAINING, SCIENTIFIC RESEARCH), CONFINED ENVIRONMENTS, STUDENTS, MANAGEMENT PLANNING, RESEARCH PROGRAM ADMINISTRATION, OPERATIONS RESEARCH, PERFORMANCE TESTS, ADJUSTMENT (PSYCHOLOGY), HUMAN ENGINEERING, SURVIVAL, CIVIL DEFENSE PERSONNEL, ATTITUDES, GROUP DYNAMICS (U)

AN OCCUPANCY EXERCISE MAY BE DEFINED AS A PLANNED PORTION OF A CIVIL DEFENSE TRAINING COURSE IN WHICH STUDENTS ARE BROUGHT TOGETHER FOR AN EXTENDED PERIOD OF TIME TO EXPERIENCE SOME OF THE CONDITIONS OF SHELTER LIVING. THE PURPOSE OF THE DOCUMENT IS TO PRESENT GUIDELINES FOR OBTAINING RESEARCH DATA FROM OCCUPANCY TRAINING EXERCISES. IT IS INTENDED FOR AN AUDIENCE OF PERSONS WHO ARE KNOWLEDGEABLE ABOUT SHELTER MANAGEMENT BUT WHO HAVE HAD LITTLE OR NO FORMAL TRAINING IN BEHAVIORAL SCIENCE RESEARCH. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-609 '34
NAVAL RADIOLOGICAL DEFENSE LAB SAN FRANCISCO CALIF
THE DESIGN AND PERFORMANCE OF A FALLOUTTESTED MANNED SHELTER STATION AND ITS SUITABILITY AS A SINGLE-FAMILY SHELTER. (U)
APR 63 54P SARTOR,J. D ;LARIVIERE,P. D. ;LEE,H. ;POND,J. L. ;
MONITOR: USNRDL , TR647

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*SHELTERS, RADIOACTIVE FALLOUT), (*CIVIL DEFENSE SYSTEMS, SHELTERS), DESIGN, COSTS, PERFORMANCE (ENGINEERING), NUCLEAR EXPLOSION DAMAGE, ENVIRONMENTAL TESTS, SPECIFICATIONS, EXPLOSION EFFECTS, GAMMA RAYS, ATTENUATION, UNDERGROUND STRUCTURES, STEEL (U)
IDENTIFIERS: PLUMBBOB OPERATION (U)

THE DESIGN DETAILS, COST ANALYSIS AND PERFORMANCE CHARACTERISTICS ARE PRESENTED FOR SMALL, PARTIALLYUNDERGROUND FALLOUT SHELTERS UTILIZED AS MANNED STATIONS DURING A NUCLEAR WEAPON EFFECTS TEST. FOUR MEN OCCUPIED EACH SHELTER AND OPERATED RADIATION MEASUREMENT AND FALLOUT COLLECTION INSTRUMENTS. TWO TYPES OF SHELTERS WERE DESIGNED TO WITHSTAND PREDICTED OVERPRESSURES: TYPE I FOR A 1-PSI OVERPRESSURE AND TYPE II FOR A 5-PSI OVERPRESSURE. THE BASIC STRUCTURE CONSISTED OF AN 8-FT DIAMETER, 10-FT LONG, 12-GAGE CORRUGATED STEEL, MULTI-PLATE PIPE. A STEEL ENTRANCEWAY INCORPORATING TWO RIGHT-ANGLE TURNS PROVIDED ACCESS TO THE BASIC STRUCTURE. DEPENDING UPON THE AMOUNT OF SOIL BACKFILL, FALLOUT GAMMA RADIATION PROTECTION FACTORS UP TO 470,000 WERE OBTAINED. THE OVERALL PERFORMANCE OF THE SHELTERS UNDER THE CONDITIONS EXPERIENCED WAS EXCELLENT. IT IS SUGGESTED THAT SHELTERS OF THIS TYPE HAVE APPLICATION NOT ONLY FOR USE AS MANNED STATIONS IN NUCLEAR WEAPON TESTING BUT CAN BE ADAPTED AS WELL FOR USE IN RESIDENTIAL AREAS AS SINGLE-FAMILY FALLOUT SHELTERS. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-609 752
BUREAU OF SOCIAL SCIENCE RESEARCH INC WASHINGTON D C
HISTORICAL INCIDENTS OF EXTREME OVERCROWDING. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
MAR 63 194P BIDERMAN,ALBERT D. ;
LOURIA,MARGOT (BACCHUS,JOAN;
REPT. NO. BSSR-354-5
CONTRACT: OCD 0562 122

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*CIVIL DEFENSE SYSTEMS, HOUSING), (*SHELTERS, CIVIL DEFENSE SYSTEMS), (*HOUSING, HISTORY), (*GROUP DYNAMICS: HOUSING), PRISONERS, CASUALTIES, REFUGEES, HOSPITALS, MENTAL DISORDERS, JAPAN, UNITED STATES POPULATION, ISRAEL, MILITARY PERSONNEL, TRANSPORTATION (U)
IDENTIFIERS: CROWDING (PEOPLE), CIVIL WAR, SLAVERY, EMIGRATION (U)

THE PRIMARY ORIENTATION OF THE REVIEW WAS TO GAIN KNOWLEDGE OF POSSIBLE HAZARDS TO LIFE AND HEALTH UNDER CONDITIONS OF OVERCROWDING THAT MIGHT OCCUR IN CIVIL DEFENSE SHELTERS. VARIOUS TYPES OF HISTORICAL INCIDENTS HAVE PRODUCED DEGREES OF CROWDING--ALONG WITH ASSOCIATED NOXIOUS AND DEPRIVATIONAL CIRCUMSTANCES--FAR MORE SEVERE AND OF LONGER DURATION THAN HAS BEEN OR CAN BE SUBJECT TO EXPERIMENTAL TEST. CONDITIONS BEYOND THOSE ORDINARILY ACCEPTED AS THE LIMITS OF HUMAN TOLERANCE HAVE BEEN WITHSTOOD ON MANY OCCASIONS BY LARGE PROPORTIONS OF THE VICTIMS OF CERTAIN CATASTROPHIC OCCURRENCES. IN A NUMBER OF OTHER CIRCUMSTANCES, INCLUDING SOME INVOLVING ONLY MODERATELY INTENSE CROWDING, VERY HIGH DEATH AND IMPAIRMENT RATES HAVE BEEN PRESENT. PHYSICAL CROWDING, PER SE, IS NOT REGARDED AS A FRUITFUL UNITARY CONCEPT FOR EXAMINING THE DIFFERENCES BETWEEN HIGH AND LOW CASUALTY EVENTS. FOR MOST OF THE RANGE OF DENSITIES, PHYSICAL CROWDING HAS SIGNIFICANCE ONLY IN INTERDEPENDENT RELATIONSHIP WITH MANY OTHER VARIABLE FEATURES OF THE ENTIRE SITUATION, INCLUDING ENVIRONMENTAL, STRUCTURAL, TEMPORAL, PSYCHOLOGICAL, AND SOCIAL FEATURES. THE ACTS OF OPPRESSIVE CAPTORS AND EPIDEMIC DISEASE WERE THE MOST FREQUENT DIRECT CAUSES OF HIGH FATALITY IN THE INCIDENTS REVIEWED. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-610 406
FLORIDA UNIV GAINESVILLE ENGINEERING AND INDUSTRIAL EXPERIMENT STATION
SECOND SIMULATED OCCUPANCY TEST, SUMMERLIN SHELTER. (U)
DESCRIPTIVE NOTE: REPT. FOR 9-20 APR 63,
APR 63 212P GONZALEZ,JUAN O. ,JR.;
FLANIGAN,F. M. ;FAIRCHILD,F. M. ;
CONTRACT: OCD OS62 116
TASK: 1212A

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*SHELTERS, SURVIVAL), (*CIVIL DEFENSE SYSTEMS, SHELTERS), (*ENVIRONMENTAL TESTS, SHELTERS), CONTROLLED ATMOSPHERES TEMPERATURE, HUMIDITY, CONTROL, VENTILATION, HEAT PRODUCTION (BIOLOGY), THERMAL PROPERTIES, METABOLISM, SIMULATION, EVAPORATION, HEAT ENGINES, THERMOCOUPLES, TANKS (CONTAINERS), AIR CONDITIONING EQUIPMENT, EXPERIMENTAL DATA, UNDERGROUND STRUCTURES, PROTECTIVE COVERINGS (U)
IDENTIFIERS: FALLOUT SHELTERS, CLEAN ROOMS (U)

A SIMULATED OCCUPANCY TEST WAS CONDUCTED ON AN EIGHTEEN OCCUPANT, TOTALLY BURIED, TANK-TYPE SHELTER LOCATED AT GAINESVILLE, FLORIDA. VENTILATION AIR TO THE SHELTER WAS SUPPLIED BY TEST EQUIPMENT WHICH PERMITTED CONTROL OF ITS TEMPERATURE AND HUMIDITY TO MATCH TYPICAL 'DESIGN DAYS' TO BE EXPECTED AT THIS LOCATION DURING THE MONTHS OF APRIL AND AUGUST. THE TEST WAS CONDUCTED DURING THE MONTH OF APRIL IN ORDER TO AFFORD A COMPARISON WITH A PREVIOUS TEST CONDUCTED DURING JULY, WHEN GROUND TEMPERATURES HAD BEEN HIGHER. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-610 819
FACTORY MUTUAL RESEARCH CORP NORWOOD MASS
FIRE SAFETY UPGRADING FOR FALL OUT SHELTERS IN BUILDINGS. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
NOV 64 17P SMITH,JAMES B. ;
COUSINS,EDWARD W. ;MILLER,MYRON J. ;
NEWMAN,R. MURRAY ;
REPT. NO. FMRC-15903
CONTRACT: N228 62479 65613
TASK: 113A

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*SHELTERS, FIRE SAFETY), (*FIRE SAFETY, BUILDINGS), CIVIL DEFENSE SYSTEMS, RADIOACTIVE FALLOUT, FIRES, HAZARDS, FIRE ALARM SYSTEMS, FIRE EXTINGUISHERS, THERMAL INSULATION, PERSONNEL, ANALYSIS, CONSTRUCTION (U)
IDENTIFIERS: FALLOUT SHELTERS (U)

THE REPORT SUGGESTS METHODS, MAINLY UNTRIED, FOR UPGRADING ON AN EMERGENCY BASIS THE FIRE SAFETY OF EXISTING FALLOUT SHELTER BUILDINGS. THE METHODS SUGGESTED ARE NOT SUBSTITUTES FOR NORMAL PEACETIME PROTECTION WHICH MAY BE: (1) HARD TO IMPLEMENT, (2) TOO COSTLY, OR (3) INCOMPATIBLE WITH FLEXIBILITY OF BUILDING OPERATIONS. THE REPORT IS BASED ON THE FOLLOWING CONCEPTS: (1) FIRE EXPOSURES TO A SHELTER BUILDING FROM WITHOUT MUST BE DENIED ENTRY TO THE SHELTER BUILDING, (2) FIRES IN A SHELTER BUILDING MUST BE PROMPTLY DETECTED AND SUPPRESSED OR EXTINGUISHED, AND (3) OCCUPANTS MUST BE PROVIDED WITH AN ENVIRONMENT WHICH WILL SUSTAIN LIFE. MOST OF THE REMEDIES SUGGESTED ARE PASSIVE SUCH AS PHYSICAL BARRIERS TO PREVENT FIRE ENTRY TO THE SHELTER BUILDING. SPECIFICALLY, THERMAL BARRIERS FOR WINDOW OPENINGS, AUTOMATIC SMOKE DETECTORS WITH MANUAL RESPONSE BY FIRE FIGHTING SHELTER PERSONNEL, AND ENVIRONMENTAL SEALS FOR SHELTER AREAS ARE RECOMMENDED AS FEASIBLE UPGRADING REMEDIES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD 411 231
HEALTH AND SAFETY LAB ATOMIC ENERGY COMMISSION NEW YORK
PROTECTION AGAINST FALLOUT RADIATION IN A SIMPLE STRUCTURE, (U)
APR 62 55P BRESLIN,A. J. ;LOYSEN,P. ; WEINSTEIN,M. S. ;
PROJ: 32 1
MONITOR: WT , 1462

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON OPERATION PLUMBBOB, NEVADA TEST SITE, MAY-OCT 57.

DESCRIPTORS: (*RADIOACTIVE FALLOUT, SHIELDING), (*SHIELDING, RADIOACTIVE FALLOUT), (*CIVIL DEFENSE SYSTEMS, RADIOACTIVE FALLOUT), SHELTERS, PROTECTIVE COVERINGS, STRUCTURES, GAMMA RAYS, DOSE RATES, RADIATION MEASUREMENT SYSTEMS, HEALTH PHYSICS (U)
IDENTIFIERS: PLUMBBOB OPERATION (U)

A REINFORCED BUTLER BUILDING WAS EXPOSED TO FALLOUT FROM SHOTS DIABLO AND SHASTA, AND THE RESULTING DOSE RATES AND FALLOUT DEPOSITION INSIDE AND OUTSIDE THE STRUCTURE WERE MEASURED WITH VARIOUS INSTRUMENTS AND TECHNIQUES. PROTECTION FACTORS AND ROOF AND GROUND CONTRIBUTIONS TO THE TOTAL DOSE RATES AT POINTS WITHIN THE STRUCTURE WERE DETERMINED FROM THE MEASUREMENTS. COMPARISONS WERE MADE WITH THE RESULTS OF THEORETICAL AND OTHER EXPERIMENTAL STUDIES. INFORMATION OBTAINED FROM THIS EXPERIMENT SHOULD BE OF VALUE AS BASIC EXPERIMENTAL DATA FOR FALLOUT PROTECTION [illegible], ALTHOUGH IT IS RECOMMENDED THAT ADDITIONAL SUBSTANTIATIVE DATA BE OBTAINED UNDER MORE CONTROLLED CONDITIONS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-611 764
DUNLAP AND ASSOCIATES INC DARIEN CONN
REQUIREMENTS FOR LOCAL PLANNING TO COVER HAZARDS OF FALLOUT. VOLUME 1. (U)
DESCRIPTIVE NOTE: FINAL REPT., VOL. 1.
JAN 65 63P
REPT. NO. DRD-64-110 VOL. 1
CONTRACT. OCD OS63 161
TASK: 4531A

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*CIVIL DEFENSE SYSTEMS, EFFECTIVENESS), (*SHELTERS, MANAGEMENT PLANNING), POPULATION, DISTRIBUTION, TRAFFIC, PASSENGER VEHICLES, FIRES, FIRE SAFETY, HAZARDS, RADIOACTIVE FALLOUT, LINEAR PROGRAMMING, CONNECTICUT (U)

THE STUDY CONCENTRATED UPON DEVELOPING EFFECTIVE PLANS FOR ASSIGNING SHELTERS TO POPULATION, AND FOR BRINGING THE POPULATION TO THE SHELTER. TWO MEDIUM-SIZED TOWNS IN CONNECTICUT, STAMFORD AND WATERBURY, WERE STUDIED IN DETAIL. FOR EACH TOWN, A STUDY WAS MADE ON THE EFFECTIVENESS OF A NUMBER OF PLANS OF VARYING DETAIL AND COMPLEXITY IN GETTING PEOPLE TO SHELTER. IN ALL PLANS IT WAS ASSUMED THAT ENOUGH TRAFFIC CONTROL WOULD BE SET UP TO AVOID BLOCKAGES OF TRAFFIC NEAR SHELTERS, AND THAT THE POPULATION WOULD KNOW TO WHAT SHELTER AREAS THEY HAD BEEN ASSIGNED, AND HOW THEY WERE SUPPOSED TO GET THERE. TWO TYPES OF SHELTER ASSIGNMENT WERE MADE: THE FIRST WAS BY CENSUS TRACT, THE SECOND BY INDIVIDUAL LOCATION. IN THE FIRST, PEOPLE FROM SHELTER-POOR CENSUS TRACTS WERE DIRECTED TO SHELTER-RICH CENSUS TRACTS, ACCORDING TO A LINEAR PROGRAMMING METHOD AIMED AT MINIMIZING DISTANCE TRAVELED. IN THE SECOND, A SIMILAR METHOD WAS USED TO ASSIGN PEOPLE TO ACTUAL BUILDINGS. STUDIES WERE MADE OF VARIOUS SPEEDS OF MOVEMENT TO SHELTER AND THEIR EFFECTS UPON RATE AT WHICH THE POPULATION WAS SHELTERED. PLANNING PROBLEMS ASSOCIATED WITH PRIMARY AND SECONDARY FIRES WERE GIVEN CURSORY EXAMINATION. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-611 765
DUNLAP AND ASSOCIATES INC DARIEN CONN.
REQUIREMENTS FOR LOCAL PLANNING TO COVER HAZARDS OF FALLOUT. VOLUME II. APPENDICES. (U)
DESCRIPTIVE NOTE: FINAL REPT., VOL. 2.
JAN 65 111P
REPT. NO. DRD-64-110 VOL. 2
CONTRACT: OCD 0563 161
TASK: 4531A

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-611 764.

DESCRIPTORS: (*CIVIL DEFENSE SYSTEMS, EFFECTIVENESS), (*SHELTERS, MANAGEMENT PLANNING), (*TRAFFIC, MATHEMATICAL MODELS), POPULATION, PASSENGER VEHICLES, MATHEMATICAL ANALYSIS, RADIOACTIVE FALLOUT, HAZARDS, DISTRIBUTION, TIME, EQUATIONS, CONNECTICUT (U)

REQUIREMENTS FOR LOCAL PLANNING TO COVER HAZARDS OF FALLOUT: APPENDICES.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-612 254
AMERICAN INSTITUTES FOR RESEARCH PITTSBURGH PA INST FOR PERFORMANCE TECHNOLOGY
LABORATORY INVESTIGATIONS OF SHELTER MANAGEMENT FACTORS. (U)
JAN 65 246P HALE,JOHN F. ;
ROSENFELD,MICHAEL ;BERKOWITZ,MORRIS I.;
REPT. NO. AIR-D-93A-1/65-TR
TASK: 1519A

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE;

DESCRIPTORS: (*SHELTERS, MANAGEMENT ENGINEERING), (*CIVIL DEFENSE PERSONNEL, LEADERSHIP), CIVIL DEFENSE SYSTEMS, NUCLEAR WARFARE, SIMULATION, SOCIAL PSYCHOLOGY, GROUP DYNAMICS, ATTITUDES, BEHAVIOR, CONFINED ENVIRONMENTS, STRESS (PSYCHOLOGY), STRESS (PHYSIOLOGY), DECISION MAKING, POPULATION (U)
IDENTIFIERS: FALLOUT SHELTERS, PROBLEM SOLVING (U)

A RESEARCH PROGRAM IS REPORTED IN WHICH SEVERAL SHELTER EXERCISES WERE CONDUCTED TO INVESTIGATE SHELTER MANAGEMENT FACTORS. THE RESULTS OF THIS PROGRAM INDICATED THAT: (1) THE MOST EFFICIENT OPERATION OF THE SHELTER OCCURED WHEN THE MANAGER WAS PRESENT FROM THE BEGINNING OF THE EXERCISE. (2) THE EFFECTIVENESS OF OPERATION IN THE ABSENCE OF THE TRAINED MANAGER DEPENDED UPON THE ATTITUDE TOWARD THE EXERCISE OF THE EMERGENT SHELTER LEADER, AND UPON THE WAY IN WHICH HE EMPLOYED THE IN-SHELTER GUIDANCE MATERIALS. (3) A MANAGEMENT STYLE IN WHICH APPROXIMATELY EQUAL ATTENTION IS GIVEN TO BOTH TECHNICAL AND NON-TECHNICAL PROBLEM AREAS WAS MUCH MORE EFFECTIVE THAN STYLES IN WHICH MORE ATTENTION IS GIVEN TO ONE OF THESE AREAS AT THE EXPENSE OF THE OTHER. (4) COMPLETE DARKNESS IN A SHELTER WAS FOUND TO BE TOLERABLE FOR 24 HOURS BY A GROUP OF VOLUNTEERS FROM THE RESEARCH STAFF OF A.I.R. THIS FINDING SHOULD BE VIEWED, NOT AS A BASE LINE, BUT RATHER AS CEILING. THAT IS, IT IS VERY UNLIKELY THAT A COMPLETE #SHELTER NAIVE GROUP, WOULD BEHAVE NEARLY AS CALMLY AND ASSUREDLY AS THIS GROUP. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-613 606
MICHIGAN STATE UNIV EAST LANSING COLL OF COMMUNICATION ARTS
ARGUMENTATIVE THEMES IN CIVIL DEFENSE: (1) A CONTENT ANALYSIS OF THE NEW YORK TIMES. (U)
DESCRIPTIVE NOTE: COMMUNICATION RESEARCH REPT.
JUN 64 75P BETTINGHAUS,ERWIN P. ;

UNCLASSIFIED REPORT

DESCRIPTORS: (*CIVIL DEFENSE SYSTEMS, PUBLIC OPINION), (*NEWSPAPERS, CIVIL DEFENSE SYSTEMS), NUCLEAR WARFARE, SHELTERS, COSTS, HISTORY, POLITICAL SCIENCE, UNITED STATES GOVERNMENT, ATTITUDES, SURVIVAL, DISARMAMENT (U)
IDENTIFIERS: FALLOUT SHELTERS, NEW YORK TIMES (U)

THE REPORT PROVIDES THE COMMUNICATION RESEARCHER OR THE PUBLIC AFFAIRS SPECIALIST WITH A CATEGORY SCHEME FOR DESCRIBING THE MATERIALS TO BE FOUND IN THE CIVIL DEFENSE FIELD. IT ALSO PROVIDES AN APPENDIX WHICH ATTEMPTS TO RECONCILE TWO DIVERGENT REPORTS ON CIVIL DEFENSE MATERIALS. ONE REPORT, ENTITLED ARGUMENTATIVE THEMES IN CIVIL DEFENSE, IS COMPARED WITH CIVIL DEFENSE AND SOCIETY BY JERI NEHNEVAJSA AND HIS COLLEAGUES AT THE UNIVERSITY OF PITTSBURGH. THE COMPARISON INDICATES THAT THE TWO REPORTS ARE NOT INCOMPATIBLE, ALTHOUGH THE CATEGORY SCHEMES USED IN THE TWO SEEM QUITE DIFFERENT. THE REPORT SUGGESTS THAT THERE ARE SIXTEEN GENERAL AREAS INTO WHICH CIVIL DEFENSE MATERIALS CAN BE PLACED. THE CATEGORIES ARE ONLY RELATIVELY INDEPENDENT, BUT CERTAINLY SERVE TO DISTINGUISH VARIOUS POSITIONS IN THE CIVIL DEFENSE DIALOGUE. THE REPORT ALSO OFFERS THE FOLLOWING TENTATIVE CONCLUSIONS REGARDING THE FREQUENCY OF MATERIALS APPEARING IN THE NEW YORK TIMES FOR THE PERIOD CITED: (1) THE GREATEST PERCENTAGE (39.4%) OF ALL ARGUMENTS IDENTIFIED REFERRED TO FALLOUT SHELTERS; AND (2) THE LARGEST PERCENTAGE OF ALL STORIES (48.2%) WERE FOUND TO BE FAVORABLE TO OCD POLICIES, AND WHEN THE NEUTRAL ARTICLES ARE REMOVED FROM CONSIDERATION, THE PERCENTAGE RISES TO 69.9%. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-614 824
WESTERN REGIONAL RESEARCH LAB ALBANY CALIF
BULGUR WAFER AND ADJUNCTS FOR FALLOUT SHELTER RATIONS. (U)
DESCRIPTIVE NOTE: ANNUAL REPT. FOR JUL 63-JUN 64,
JAN 65 52P SHEPHERD,ALLAN D. ;
BEAVERS,DARRELL V. ;FERREL,ROBERT E.;
HORVAT,ROBERT J. ;NG,HAWKINS ;
CONTRACT: OCD OS62 54
PROJ: 1300
TASK: 1310

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*RADIOACTIVE FALLOUT, SHELTERS), (*SHELTERS, RADIOACTIVE FALLOUT), (*FOOD, SHELTERS), WHEAT, STORAGE, LIFE EXPECTANCY, STABILITY, TASTE, OXIDATION, DECOMPOSITION, CHEMICAL ANALYSIS, TESTS, CONDIMENTS, CIVIL DEFENSE SYSTEM (U)
IDENTIFIERS: BULGUR WAFERS (U)

LONG-TERM (FIVE-YEAR) STUDIES OF THE STORAGE LIFE OF BULGUR WAFERS AND ADJUNCTS (FOOD TO SERVE WITH THE WAFERS TO VARY FALL OUT SHELTER MENUS) ARE IN PROGRESS. TASTE PANEL RESULTS AFTER 16 MONTHS OF STORAGE INDICATE THAT THE SHELF-LIFE OF BULGUR WAFERS MAY BE INCREASED BY NITROGEN-GAS PACKING AND BY USE OF MALT SIRUP RATHER THAN CORN SIRUP IN THE FORMULATION. CHEMICAL-PHYSICAL ANALYSES ARE BEING MADE ON DUPLICATE SAMPLES OF WAFERS IN A SEARCH FOR A TEST THAT CORRELATES WITH ORGANOLEPTIC EVALUATION. TRENDS ARE NOT YET WELL ENOUGH DEVELOPED TO PERMIT MEANINGFUL CORRELATION. IDENTIFY OF COMPONENTS OF THE VAPORS FROM RANCIDIFYING BULGUR AND FROM A MODEL COMPOUND, METHYL LINOLEATE (LINOLEIC ACID COMPRISES MORE THAN HALF OF THE FATTY ACIDS IN WHEAT), IS BEING SOUGHT BY MEANS OF A NEW TECHNIQUE WHICH COMBINES GAS-LIQUID CHROMATOGRAPHY AND RAPID-SCAN MASS SPECTROMETRY. WHEAT PRODUCTS PREPARED BY HOT-AIR PUFF-DRYING AND BY GUN PUFFING HAVE BEEN EVALUATED AS WAFER INGREDIENTS POTENTIALLY CHEAPER THAN REGULAR PUFFED BULGUR. MATERIAL OBTAINED BY HOT-AIR PUFF-DRYING SHOWS SOME PROMISE AS A SUITABLE ALTERNATE WHEAT INGREDIENT FOR WAFERS. SEVERAL NEW ADJUNCTS HAVE BEEN PROPOSED, INCLUDING A PECTIN JELLY PREPARED WITH COLD WATER TO REPLACE THE ORIGINALLY DEVELOPED JELLIES REQUIRING HOT WATER FOR PREPARATION. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-614 895
RAND CORP SANTA MONICA CALIF
THE CHINESE NUCLEAR EXPLOSION, N-NATION NUCLEAR DEVELOPMENT AND CIVIL DEFENSE, (U)
APR 65 26P ZILBERT,E. R. ;
REPT. NO. P-3074

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*NUCLEAR EXPLOSIONS, CHINA), (*CHINA, NUCLEAR EXPLOSIONS), (*UNITED STATES, CIVIL DEFENSE SYSTEMS), (*CIVIL DEFENSE SYSTEMS, UNITED STATES), RADIOACTIVE FALLOUT, NUCLEAR WARFARE, HISTORY, SHELTERS, INDIA, BRAZIL, CUBA (U)
IDENTIFIERS: FALLOUT SHELTERS (U)

THE OCTOBER 1964 EXPLOSION OF AN ATOMIC DEVICE BY CHINA IS REVIEWED, WITH THOUGHT AS TO POSSIBLE SIMILAR ACTIVITIES BY OTHER COUNTRIES SUCH AS INDIA AND BRAZIL. THE UNITED STATES GOVERNMENT IS TAKEN TO TASK FOR HAVING IMPLEMENTED NO FALLOUT SHELTER PROGRAM. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-614 979
NAVAL CIVIL ENGINEERING LAB PORT HUENEME CALIF
DEVELOPMENTS IN PROTECTIVE SHELTER SYSTEMS. (U)
DESCRIPTIVE NOTE: REPT. FOR JUL 62-MAY 64,
APR 65 124P RUSH,P. J. ;
REPT. NO. NCEL-TR-357
PROJ: Y-F011-05-02-303

UNCLASSIFIED REPORT

DESCRIPTORS: (*SHELTERS, DESIGN), (*CIVIL DEFENSE SYSTEMS, SHELTERS), BLAST, NUCLEAR EXPLOSIONS, DRAG, SHOCK (MECHANICS), CRATERING, THERMAL RADIATION, BIOLOGICAL WARFARE AGENTS, CHEMICAL WARFARE AGENTS, UNDERGROUND STRUCTURES, SPECIFICATIONS, SOILS, CONSTRUCTION, OPERATION, MATERIALS, ELECTROMAGNETIC PULSES, COSTS, AIR, TEMPERATURE CONTROL, HUMIDITY, WATER SUPPLIES, FOOD, MEDICAL SUPPLIES, SANITARY ENGINEERING, ILLUMINATION, POWER SUPPLIES, COMMUNICATION SYSTEMS (U)

TOPICS INCLUDE: BIBLIOGRAPHY OF NUCLEAR WEAPONS EFFECTS, THE PROTECTIVE STRUCTURE, CONFINING SOILS, ENTRANCEWAYS AND EXITS, BLAST EXCLUSION METHODS, SHOCK ISOLATION, NUCLEAR AND THERMAL RADIATION RESISTANCE, ELECTROMAGNETIC PULSE RESISTANCE, RESISTANCE TO CHEMICAL AND BACTERIOLOGICAL ATTACK, SHELTER COSTS, SPACE AND FURNISHING REQUIREMENTS, AIR SUPPLY, TEMPERATURE AND HUMIDITY CONTROL, WATER AND FOOD SUPPLIES, MEDICAL SUPPLIES, SANITARY FACILITIES, ILLUMINATION, ELECTRIC POWER SUPPLY, COMMUNICATIONS. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-615 003
GEORGIA UNIV ATHENS
SHELTER OCCUPANCY STUDIES AT THE UNIVERSITY OF GEORGIA. (U)
DESCRIPTIVE NOTE: APPENDICES.
DEC 64 149P
TASK: 1521A

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-615 004.

DESCRIPTORS: (*RADIOACTIVE FALLOUT, SHELTERS), (*SHELTERS, SCIENTIFIC RESEARCH), (*MANAGEMENT ENGINEERING, SHELTERS), CIVIL DEFENSE SYSTEMS, PERSONNEL MANAGEMENT, PERSONNEL, PERFORMANCE (HUMAN), CONFINED ENVIRONMENTS, STRESS (PSYCHOLOGY), STRESS (PHYSIOLOGY), PERSONALITY, LEADERSHIP, SANITARY ENGINEERING, PHENOLS, SLEEP, TEMPERATURE, FOOD, WATER, PHYSICAL FITNESS, VENTILATION, LOGISTICS, ENVIRONMENTAL TESTS (U)

FROM 8-21 FEBRUARY, 1964, A 13-DAY SIMULATED FALLOUT SHELTER OCCUPANCY TEST WAS CONDUCTED BY THE UNIVERSITY OF GEORGIA PSYCHOLOGICAL LABORATORIES. THIS TEST WAS THE FIFTH IN A SERIES OF SUCH STUDIES. ITS PRIMARY PURPOSE WAS THE EVALUATION OF SHELTER SURVIVAL WITHOUT A TRAINED SHELTER MANAGER. OTHER PURPOSES INCLUDED RELATIVE FOOD PREFERENCE TESTS, COMMODE CHEMICAL TESTS, AND COGNITIVE VIGILANCE TESTS. THIRTY SHELTEREES, 15 MALES, 15 FEMALES, AGED 7-70, PARTICIPATED. STRESS CONDITIONS INCLUDED RESTRICTED FOOD AND WATER RATIONS, MINIMAL LIVING SPACE (8 SQ. FT./PERSON), A CHEMICAL COMMODE, REDUCED VENTILATION, AND SLEEPING ACCOMMODATIONS OF CORRUGATED FIBERBOARD PLACED OVER A CONCRETE FLOOR. THE SHELTER MANAGER WAS APPOINTED, ALTHOUGH HE RECEIVED NO PRIOR TRAINING IN MANAGEMENT METHODS OR FAMILIARIZATION WITH SHELTER MATERIAL. A SHELTER MANAGER HANDBOOK, WITH ADDITIONAL INSTRUCTIONAL MATERIAL, WAS STOCKED WITH THE OCD SHELTER SUPPLIES. THE HANDBOOK PROVIDED INFORMATION ON USE OF STOCKED ITEMS, AS WELL AS A SUGGESTED DAILY ACTIVITY AND TRAINING PROGRAM. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-615 005
GEORGIA UNIV ATHENS
SHELTER OCCUPANCY STUDIES AT THE UNIVERSITY OF GEORGIA. (U)
DESCRIPTIVE NOTE: FINAL SUMMARY REPT.,
DEC 64 20P HAMMES,JOHN A. ;
TASK: 1521A

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-615 004.

DESCRIPTORS: (*RADIOACTIVE FALLOUT, SHELTERS), (*SHELTERS, SCIENTIFIC RESEARCH), (*MANAGEMENT ENGINEERING, SHELTERS), CIVIL DEFENSE SYSTEMS, PERSONNEL MANAGEMENT, PERSONNEL, PERFORMANCE (HUMAN), CONFINED ENVIRONMENTS, STRESS (PSYCHOLOGY), STRESS (PHYSIOLOGY), PERSONALITY, LEADERSHIP, SANITARY ENGINEERING, PHENOLS, SLEEP, TEMPERATURE, FOOD, WATER, PHYSICAL FITNESS, VENTILATION, LOGISTICS, ENVIRONMENTAL TESTS (U)

SHELTER OCCUPANCY STUDIES.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-615 391
IIT RESEARCH INST CHICAGO ILL
SHELTER FIRE VULNERABILITY - SURVEY AND ANALYSIS OF REPRESENTATIVE BUILDINGS. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
MAR 65 101P VARLEY,R. B. ;MAATMAN,G. L. ;
CONTRACT: OCD OS62 210
PROJ: N6005

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*SHELTERS, FIRE SAFETY), (*FIRE SAFETY, SHELTERS), (*RADIOACTIVE FALLOUT, SHELTERS), FIRE EXTINGUISHERS, FIRES, VULNERABILITY, NUCLEAR EXPLOSION DAMAGE, STRUCTURAL PROPERTIES, CIVIL DEFENSE SYSTEMS, HAZARDS (U)
IDENTIFIERS: FIRE-RESISTANT MATERIALS (U)

THE VULNERABILITY OF FALLOUT SHELTERS TO FIRES FROM ACCIDENTAL SOURCES AS WELL AS FROM DIRECT NUCLEAR WEAPON EFFECTS ARE EVALUATED. THIS WAS ACCOMPLISHED BY SURVEY AND ANALYSIS OF 102 STOCKED SHELTER BUILDINGS IN ELEVEN CITIES CHOSEN TO GIVE REASONABLE DIVERSITY IN SIZE, INDUSTRIAL AND COMMERCIAL EMPHASIS, AND GEOGRAPHIC LOCATION. OPERATIONAL GUIDANCE DEVELOPED FOR THE SELECTION AND UPGRADING OF SHELTER BUILDINGS AND RECOMMENDED FALLOUT SHELTER PROVISIONS FOR PUBLIC BUILDING CODES ARE ESTABLISHED FOR BOTH EXISTING STRUCTURES AND NEW CONSTRUCTION. AREAS FOR FUTURE STUDY AND DEVELOPMENT ARE IDENTIFIED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-615 640
PROTECTIVE STRUCTURES DEVELOPMENT CENTER FORT BELVOIR VA
EVALUATION OF 200-PERSON SHELTER (VENTILATION). (U)
DESCRIPTIVE NOTE: REPT. FOR 29 SEP-1; OCT 63.
APR 65 52P SVAERI,O. W. ;
REPT. NO. PSDC-TR-6

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*SHELTERS, VENTILATION), (*RADIOACTIVE FALLOUT, SHELTERS), CIVIL DEFENSE SYSTEMS, THERMAL PROPERTIES, TEMPERATURE, HUMIDITY, HEAT TRANSFER (U)

OBSERVATIONS WERE MADE OF THE THERMAL ENVIRONMENT IN THE BASEMENT PORTION OF A BOX SHAPED REINFORCED CONCRETE 200 PERSON SHELTER WHEN THE SHELTER WAS SUPPLIED WITH A MINIMUM QUANTITY OF VENTILATION AIR. ALSO, AN EVALUATION WAS MADE OF THE DISTRIBUTION OF THE VENTILATION AIR IN THE SHELTER AS MEASURED BY VARIATIONS IN EFFECTIVE TEMPERATURE. WHEN THE AIR WAS SUPPLIED THROUGH A DUCT SYSTEM AND THROUGH A SINGLE POINT SOURCE. VENTILATION AIR CONDITIONED TO SIMULATE A 1% DESIGN DAY IN THE WASHINGTON, D. C. AREA (I.E. AIR AT DRY BULB AND WET BULB TEMPERATURES WHICH WILL NOT BE EXCEEDED MORE THAN 1% OF THE TIME), WAS SUPPLIED TO THE SHELTER AREA TESTED. APPROXIMATELY 100 SIMULATED OCCUPANTS WERE PLACED IN THE SHELTER BASEMENT TO GENERATE THE SAME AMOUNT OF HEAT AND MOISTURE AS 100 HUMAN OCCUPPANTS. WHEN CONDITIONED AIR WAS SUPPLIED AT A MINIMUM RATE OF 3 CFM PER PERSON, EFFECTIVE TEMPERATURES AS HIGH AS 90 DEG WERE ATTAINED AND MAINTAINED WITHIN THE SHELTER. BASED ON CURRENT STANDARDS FOR THE THERMAL ENVIRONMENT IN SHELTERS, IT IS CONCLUDED THAT A MINIMUM VENTILATION RATE OF 3 CFM IS NOT ADEQUATE FOR COOLING THIS SHELTER SPACE. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-615 779
INSTITUTE FOR DEFENSE ANALYSES ARLINGTON VA ECONOMIC AND POLITICAL STUDIES DIV
A DAMAGE-LIMITING SHELTER-ALLOCATION STRATEGY, (U)
APR 65 74P KELLEHER,GRACE J. I
REPT. NO. S-186 ,IDA-HQ-65-3518
CONTRACT: OCD OS63 134
TASK: 4113C

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*SHELTERS, NUCLEAR EXPLOSION DAMAGE), (*NUCLEAR EXPLOSION DAMAGE, SHELTERS), (*CIVIL DEFENSE SYSTEMS, SHELTERS), RADIOACTIVE FALLOUT, SURVIVAL, NUCLEAR WARFARE CASUALTIES, NATIONAL DEFENSE, URBAN AREAS, POPULATION, BLAST, COSTS, MATHEMATICAL MODELS (U)
IDENTIFIERS: FALLOUT SHELTERS, COST-EFFECTIVENESS ANALYSIS (U)

A DAMAGE-LIMITING STRATEGY FOR ALLOCATING BLAST AND FALLOUT SHELTER PROTECTION IS PROPOSED. THE FEATURES WHICH COMBINE TO MAKE THIS STRATEGY UNIQUE ARE ITS RELATIVELY FINE-GRAINED LOCAL ORIENTATION AND ITS ABILITY TO MEET A SURVIVAL PERCENTAGE CRITERION IRRESPECTIVE OF THE ACTUAL GROUND ZERO WITHIN THE AREA CONSIDERED. THE STRATEGY PROPOSED HERE TAILORS SHELTER POSTURES TO THE CONDITIONS AND NEEDS OF INDIVIDUAL CITIES OR LOCAL AREAS. THIS LOCAL APPROACH COULD BE USED TO DEVELOP A NATIONAL SHELTER PROGRAM EVALUATING THE NEEDS OF MANY CITIES BY SERIAL APPLICATION OF THE SHELTER ALLOCATION MODEL. SHELTER POSTURES PRODUCED UNDER THIS STRATEGY CONSIDER ALL POTENTIAL GROUND ZEROS WITHIN THE PROTECTED AREA AS PART OF THE SHELTER ALLOCATION PROCESS; THUS, FATALITIES FROM IMMEDIATE BLAST EFFECTS AND FALLOUT ARE LIMITED TO A STIPULATED LEVEL, IRRESPECTIVE OF WHERE AN ASSUMED WEAPON MIGHT BE DELIVERED WITHIN A TARGET CITY. COSTS ARE MINIMIZED IN THE SHELTER ALLOCATION PROCESS BY FOLLOWING THREE SPECIFIC DECISION RULES DESCRIBED. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-617 111
HUDSON INST INC HARMON-ON-HUDSON N Y
AN EVALUATION OF THE SHELTER POTENTIAL IN MINES, CAVES AND TUNNELS. (U)
DESCRIPTIVE NOTE: FINAL RESEARCH REPT.,
JUN 65 76P KRUPKA,ROBERT A. ;
REPT. NO. HI-507-RR
TASK: 42118

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-617 112.

DESCRIPTORS: (*SHELTERS, UNDERGROUND STRUCTURES), (*UNDERGROUND STRUCTURES, SHELTERS), FEASIBILITY STUDIES, COSTS, CIVIL DEFENSE SYSTEMS (U)

THIS STUDY EXAMINES THE AVAILABILITY AND THE POTENTIAL OF USING MINE SPACE (AND TO A LESSER EXTENT, CAVE AND TUNNEL SPACE) IN FUTURE CIVIL DEFENSE PROGRAMS. IT PROVIDES BACKGROUND INFORMATION CONCERNING PREVIOUS RESEARCH ON THIS STUDY, AND MAKES NEW ESTIMATES OF USABLE SPACE AND YEARLY SPACE INCREASES, BASED ON A SAMPLE SURVEY OF A FEW MINES. THE POSSIBILITIES AND COSTS OF DEVELOPING NEW MINE SPACE AND ADAPTING MINES TO SHELTER USE IS ALSO DISCUSSED. INFORMATION ON CAVES AND TUNNELS IS ALSO INCLUDED. THREE APPENDICES (AD-617 112) ARE INCLUDED WITH THIS REPORT, CONTAINING DETAILED LISTING OF MINES AND CAVES LOCATED BY THE NATIONAL FALLOUT SHELTER SURVEY, AND DETAILED LISTINGS AND LOCATIONS OF VEHICULAR TUNNELS. THIS DATA IS INTENDED FOR POSSIBLE USE BY THOSE WHO MIGHT WISH TO UNDERTAKE MORE SPECIFIC STUDIES OF SHELTER POTENTIAL IN MINES, CAVES, AND TUNNELS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-617 112
HUDSON INST INC HARMON-ON-HUDSON N Y
AN EVALUATION OF THE SHELTER POTENTIAL IN MINES, CAVES AND TUNNELS. APPENDICES I, II, III. (U)
JUN 65 147P KRUPKA,ROBERT A. I
REPT. NO. HI-507-RR/1 2 3
TASK: 42118

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-617 111.

DESCRIPTORS: (*SHELTERS, UNDERGROUND STRUCTURES), (*UNDERGROUND STRUCTURES, SHELTERS), CIVIL DEFENSE SYSTEMS, TABLES (U)

DETAILED LISTING OF MINES AND CAVES LOCATED BY THE NATIONAL FALLOUT SHELTER SURVEY, AND DETAILED LISTING AND LOCATIONS OF VEHICULAR TUNNELS. THIS DATA IS INTENDED FOR POSSIBLE USE IN MORE SPECIFIC STUDIES OF SHELTER POTENTIAL IN MINES, CAVES, AND TUNNELS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-617 113
HUDSON INST INC HARMON-ON-HUDSON N Y
POPULATION DENSITY IN THE UNITED STATES URBANIZED AREAS. (U)
DESCRIPTIVE NOTE: FINAL RESEARCH REPT.,
MAR 65 54P BROWN,WILLIAM M. ;
GUTELLE,PAULINE ;
REPT. NO. HI-496-RR
TASK: 4211B

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*POPULATION, URBAN AREAS), (*URBAN AREAS, UNITED STATES), (*SHELTERS, CIVIL DEFENSE SYSTEMS), DENSITY, COSTS, TABLES, MATHEMATICAL MODELS (U)

OPTIMIZING THE DESIGN OF A BLAST SHELTER PROGRAM BASED ON THE PRINCIPLE OF A BALANCED DEFENSE REQUIRES A FAIRLY ACCURATE KNOWLEDGE OF THE DISTRIBUTION OF THE POPULATION DENSITY IN THE URBANIZED AREAS ON A MICRO-SCALE, USING AREAS AS SMALL AS ONE MILE. USING THE CENSUS TRACT DATA MADE AVAILABLE BY THE CENSUS BUREAU AND THE OFFICE OF CIVIL DEFENSE, THIS PAPER DEVELOPS A MODEL OF THE MICRO-POPULATION DENSITY DISTRIBUTION THROUGHOUT THE URBANIZED AREAS OF THE UNITED STATES. OUR RESULTS ARE BASED ON (1) A DETAILED EXAMINATION OF THE FIVE LARGEST CENTRAL CITIES, (2) A COMBINATION OF THE MICRO-EXAMINATION AND STATISTICS FOR THE OTHER 208 CENTRAL CITIES, AND (3) A CRUDE SUB-MODEL FOR THE URBAN FRINGE AREAS. THE MAIN RESULTS OF OUR CALCULATIONS SHOW FIRST THE NUMBER OF PEOPLE (1960) IN EACH OF THE SELECTED DENSITY CATEGORIES, AND SECOND, THE NATIONAL COST OF PROVIDING BLAST SHELTERS FOR THEM CLOSE TO THEIR RESIDENCES. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-619 518
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
NUCLEAR WEAPONS AND PROTECTION FROM THEM. (U)
MAY 64 52P VLASOV,I. I
REPT. NO. FTD-MT-64-191
MONITOR: TT , 65-63114

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED MACHINE TRANS. OF MONO. YADERNOE ORUZHIE I ZASHCHITA OT NEGO, MOSCOW 1963 P1-49.

DESCRIPTORS: (*NUCLEAR WEAPONS, CIVIL DEFENSE SYSTEMS), (*CIVIL DEFENSE SYSTEMS, NUCLEAR WEAPONS), NUCLEAR BOMBS, NUCLEAR WARFARE, NUCLEAR EXPLOSIONS, NUCLEAR EXPLOSION DAMAGE, SHOCK WAVES, RADIATION HAZARDS, RADIOACTIVITY, UNDERGROUND STRUCTURES, SHELTERS, PROTECTIVE MASKS, POPULATION, USSR (U)
IDENTIFIERS: FALLOUT SHELTERS (U)

CONTENTS: GENERAL CHARACTERISTICS OF NUCLEAR WEAPONS; CHARACTERISTICS OF A NUCLEAR EXPLOSION; APPLICATIONS OF NUCLEAR WEAPONS; DESTRUCTIVE EFFECT OF NUCLEAR WEAPONS; SHOCK WAVE; LIGHT RADIATION; PENETRATING RADIATION; RADIOACTIVE CONTAMINATION OF SITE; BRIEF CHARACTERISTICS OF A NUCLEAR STRIKEN AREA; THE MAIN PRINCIPLES OF ORGANIZING PROTECTION FROM NUCLEAR WEAPONS; MEANS AND METHODS OF PROTECTION FROM NUCLEAR WEAPONS; COLLECTIVE MEANS OF PROTECTION; INDIVIDUAL MEANS OF PROTECTION; MAIN OBLIGATIONS AND RULES FOR THE BEHAVIOR OF THE POPULATION UNDER NUCLEAR ATTACK. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-620 893
DIKEWOOD CORP ALBUQUERQUE N MEX
VULNERABILITY REDUCTION USING MOVEMENT AND SHELTER. (U)
DESCRIPTIVE NOTE: SUMMARY REPT., VOL. 1,
JUN 65 11P BRANNON,D. E. ;FLANAGAN,R. J.
;DIKE,S. H. ;GRANZOW,K. D. ;DURAND,A. R. ;
REPT. NO. DC-FR-1039 V.1
CONTRACT: OCD OS63 109

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*CIVIL DEFENSE SYSTEMS, NUCLEAR WARFARE), (*NUCLEAR WARFARE, CIVIL DEFENSE SYSTEMS), (*SHELTERS, CIVIL DEFENSE SYSTEMS), (*URBAN PLANNING, CIVIL DEFENSE SYSTEMS), NUCLEAR WARFARE CASUALTIES, REDUCTION, PROTECTIVE COVERINGS, SITE SELECTION, POPULATION, SCHEDULING, OPTIMIZATION, MATHEMATICAL MODELS, PROGRAMMING(COMPUTERS) (U)

THIS REPORT DESCRIBES AN EFFORT TO FIND PREFERRED MIXTURES OF MOVEMENT AND SHELTER AS CIVIL DEFENSE RESPONSES TO THE THREAT OF NUCLEAR WAR. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-620 894
DIKEWOOD CORP ALBUQUERQUE N MEX
VULNERABILITY REDUCTION USING MOVEMENT AND SHELTER. (U)
DESCRIPTIVE NOTE: FINAL REPT., VOL. 2,
JUN 65 143P FLANAGAN,R. J. ;BRANNON,D. E. ;DIKE,S. H. ;GRANZOW,K. D. ;DURAND,A. R. ;

REPT. NO. DC-FR-1039 V. 2
CONTRACT: OCD OS63 109

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-620 893.

DESCRIPTORS: (*CIVIL DEFENSE SYSTEMS, NUCLEAR WARFARE), (*NUCLEAR WARFARE, CIVIL DEFENSE SYSTEMS), (*SHELTERS, CIVIL DEFENSE SYSTEMS), (*URBAN PLANNING, CIVIL DEFENSE SYSTEMS), NUCLEAR WARFARE CASUALTIES, REDUCTION, PROTECTIVE COVERINGS, SITE SELECTION, TRANSPORTATION, POPULATION, SCHEDULING, MATHEMATICAL MODELS, PROGRAMMING(COMPUTERS) (U)

THIS REPORT DESCRIBES AN EFFORT TO FIND PREFERRED MIXTURES OF MOVEMENT AND SHELTER AS CIVIL DEFENSE RESPONSES TO THE THREAT OF NUCLEAR WAR. TWO APPROACHES WERE FOLLOWED: (1) MIXTURES OF MOVEMENT AND SHELTER WERE STUDIED IN THREE STEPS. THESE CONSISTED OF: POSTULATION OF ALTERNATIVE MOVEMENT AND SHELTER POLICIES, DEVELOPMENT OF MOVEMENT AND SHELTER PLANS BASED ON THESE POLICIES, EVALUATION OF PLANS DEVELOPED IN (B) AGAINST THE RANGE OF ATTACK CONDITIONS CONSIDERED REASONABLE. (2) A MATHEMATICAL MODEL WAS CONSTRUCTED TO PROVIDE A VEHICLE FOR SENSITIVITY ANALYSES. A TECHNIQUE FOR PLANNING LARGE-SCALE STRATEGIC MOVEMENTS WAS DEVELOPED AND APPLIED TO SEVERAL PARTICULAR PLACES. THE TECHNIQUE IS BELIEVED TO BE DEVELOPED SUFFICIENTLY TO PROVIDE A BASIS FOR PLANNING A FIRST-GENERATION STRATEGIC MOVEMENT CAPABILITY FOR THE U. S. TWO COMPUTER PROGRAMS WERE DEVELOPED AS TOOLS FOR EVALUATING STRATEGIC MOVEMENT AGAINST PARTICULAR ATTACKS AND FOR EVALUATING VARIOUS TRANS-ATTACK RESPONSES TO LARGE-SCALE MOVEMENTS INTERRUPTED BY WAR. BLAST SHELTER PLANNING PROGRAMS ARE ALSO REVIEWED AND DEVELOPED FURTHER. EVALUATION TECHNIQUES ARE ALREADY AVAILABLE. THE MATHEMATICAL MODEL APPROACH ENDED WITH THE DEVELOPMENT OF A COMPUTER PROGRAM FOR FINDING THE SHELTER LOCATION AND HARDNESS REQUIRED TO MAXIMIZE OVERALL SURVIVAL PROBABILITY. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-621 998
MONTANA STATE UNIV BOZEMAN DEPT OF MECHANICAL ENGINEERING
VENTILATION OF FALLOUT SHELTERS BY INDUCED DRAFT. (U)
DESCRIPTIVE NOTE: REPT. FOR 1 JUL 64-30 JUN 65, JUN 65 148P WHITEHILL,C. F. ;MULLIKIN,H. F. ;KUBAL,O. A. ;

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*RADIOACTIVE FALLOUT, SHELTERS), (*SHELTERS, VENTILATION), (*VENTILATION, SHELTERS), (*CIVIL DEFENSE SYSTEMS, SHELTERS), GAS FLOW, EXHAUST GASES, COMBUSTION PRODUCTS, DUCTS, HEALTH PHYSICS, THERMODYNAMICS (U)

OCCUPANTS OF FAMILY-TYPE FALLOUT SHELTERS REQUIRE FRESH VENTILATION AIR AT THE MINIMUM SURVIVAL RATE OF 3 CFM PER PERSON. BECAUSE COST LIMITATIONS EXCLUDE THE USE OF AUXILIARY POWER PLANTS (DIESEL OR GASOLINE ENGINES) TO OPERATE VENTILATING FANS OR BLOWERS, AN INEXPENSIVE, SIMPLE, AND EFFECTIVE METHOD OF SUPPLYING FRESH AIR TO HOME SHELTERS IS NEEDED. IT IS DEMONSTRATED THAT A MINIMUM AIR RATE CAN BE OBTAINED IN HOME SHELTERS BY INDUCING DRAFT IN THE EXHAUST STACK BY MEANS OF A FLAME FROM A KEROSENE BURNER WHICH CAN SIMULTANEOUSLY PROVIDE ILLUMINATION. THE VENTILATION TEST PROCEDURE INCLUDED INDUCING AIR TO FLOW THROUGH THE SHELTER, DETERMINING THE ACTUAL CUBIC FEET PER MINUTE OF AIR FLOWING, MEASURING AIR TEMPERATURES AT INLET, ROOM, AND STACK, MEASURING THE PRESSURE DROP OR RESTRICTION TO AIR FLOW AT THE SHELTER INLET, AND FINDING THE EFFECTS OF VARIOUS STACK SIZES AND CONFIGURATIONS UPON AIR FLOW RATES. DATA WERE ALSO TAKEN TO DETERMINE THE EFFECT OF VARIOUS STACK SIZES AND CONFIGURATIONS ON THE FUEL CONSUMPTION OF THE HEATING DEVICES. VENTILATION OF FAMILY-TYPE SHELTERS BY THE INDUCED DRAFT METHOD IS EFFECTIVE AND RELIABLE IF THE FOLLOWING CONDITIONS ARE OBSERVED: (1) WIND VELOCITIES AROUND THE STACK OUTLET ARE KEPT TO A MINIMUM OR A GOOD VENTILATOR STACK CAP IS USED; (2) FILTERS ARE NOT USED AT THE SHELTER INLET (AIR TAKEN FROM BODY OF HOUSE); AND (3) THE INTAKE AREA OF SHELTER IS MUCH LARGER THAN THE CROSS-SECTIONAL AREA OF THE STACK. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-623 464
HRB-SINGER INC STATE COLLEGE PA
PSYCHO-SOCIAL PROBLEMS OF SHELTER OCCUPANCY. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
JUL 65 245P WRIGHT,GRACE M. ;
HAMBACHER,WILLIAM O. ;
REPT. NO. HRB-751.11-F
CONTRACT: OCD 0565 5
PROJ: OCD-1500
TASK: 1510

UNCLASSIFIED REPORT

DESCRIPTORS: (*SHELTERS, SOCIAL PSYCHOLOGY), (*SOCIAL PSYCHOLOGY, SHELTERS), STRESS(PSYCHOLOGY), CIVIL DEFENSE SYSTEMS, PROJECTIVE TECHNIQUES, BEHAVIOR, ADJUSTMENT(PSYCHOLOGY) (U)
IDENTIFIERS: CROWDING(PEOPLE), ENVIRONMENT (U)

THE PROJECT DEVELOPED A PSYCHOLOGICAL MODEL OF PROTECTIVE SHELTERS AND A METHODOLOGY FOR IDENTIFYING AND DESCRIBING THE PSYCHOLOGICAL STRESSES AND SUPPORTS EXISTING DURING ENSHELTERMENT. THE ADMISSION WARDS OF SELECTED PSYCHIATRIC HOSPITALS WERE USED AS AN ANALOGUE TO THE SHELTER CONFINEMENT WITH SUBJECTS RIGOROUSLY SELECTED TO INSURE VALID EXTRAPOLATION OF RESULTS TO THE PROJECTED SHELTER OCCUPANCY POPULATION. EMPHASIS WAS PLACED UPON STUDYING THE PSYCHOLOGICAL RATHER THAN THE PHYSICAL ENVIRONMENT. THE APPROACH UTILIZED A LITERATURE COLLATION COVERING THE CLINICAL AS WELL AS THE TRADITIONAL STRESS RESEARCH IN ORDER TO DEFINE AND DESCRIBE THE PSYCHOLOGICAL PROCESSES OCCURRING WITHIN THE SHELTER. SELECTED PROJECTIVE TECHNIQUES, A WARD BEHAVIOR RATING FORM, AND AN IN-HOUSE DEVELOPED SELFRATING FORM PROVIDED DATA FOR ORDERING THE PSYCHOLOGICAL PROCESSES UNDER INVESTIGATION IN TERMS OF PROBABILITY OF OCCURRENCE AND IMPORTANCE OF RESULTING BEHAVIOR. THESE DATA ALSO PROVIDED A BASE FOR VALIDATING COMPARISONS WITH DATA FROM EXISTING OCCUPANCY STUDIES. A SET OF DIAGNOSTIC TOOLS WAS DEVELOPED FOR USE BY THE SHELTER MANAGER. A TWO-MAN GAME WAS CONSTRUCTED AND PRETESTED AS A SCREENING DEVICE FOR SHELTER MANAGER USE. A SET OF PROBABLE BEHAVIORS RELATED TO THE RESULTS OBTAINED FROM THE ABOVE WERE PROVIDED AS WELL AS A SET OF REMEDIAL ACTIONS TO BE TAKEN BY THE SHELTER MANAGER. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-623 578
PUBLIC HEALTH SERVICE WASHINGTON D C DIV OF HEALTH MOBILIZATION
HEAT SYNDROME DATA FROM SELECTED HOSPITAL RECORD SURVEY. (U)
DESCRIPTIVE NOTE: FINAL REPT.
65 89P
CONTRACT: OCD 0S62 100
TASK: 1221A

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*HEAT TOLERANCE, STATISTICAL ANALYSIS), AGING(PHYSIOLOGY), CARDIOVASCULAR SYSTEM, CIVIL DEFENSE SYSTEMS, CLIMATOLOGY, DISASTERS, EPIDEMIOLOGY, HOSPITALS, HUMIDITY, LOUISIANA, MEDICAL PERSONNEL, SHELTERS, STRESS(PHYSIOLOGY), SURVIVAL (U)

STATISTICAL ANALYSIS OF HEAT SYNDROME CAUSES, BOTH ENVIRONMENTAL AND HUMAN FACTORS, WITH PREVENTIVE AND ALLEVIATING SUGGESTIONS FOR CIVIL DEFENSE SHELTERS AND SIMILAR SITUATIONS. USEFUL BASE FOR CLINICAL EVALUATION, FOR PHYSICIANS AND OTHER MEDICAL PERSONNEL IN EMERGENCY SITUATIONS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-624 370 13/13 15/3 18/5
INSTITUTE FOR DEFENSE ANALYSES ARLINGTON VA WEAPONS SYSTEMS EVALUATION DIV
MAGNITUDE AND DISTRIBUTION OF WEAPON EFFECTS FOR THE DESIGN OF SHELTERS FOR PROTECTION AGAINST FALLOUT. (U)
DESCRIPTIVE NOTE: RESEARCH PAPER.
JUL 65 98P KNAPP,H. A. ;
REPT. NO. RP-P-194

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*FALLOUT SHELTERS, DESIGN), (*NUCLEAR EXPLOSION DAMAGE, ANALYSIS), (*NUCLEAR WEAPONS, RADIATION EFFECTS), (*RADIATION EFFECTS, ANALYSIS), CIVIL DEFENSE SYSTEMS, NUCLEAR WARFARE CASUALTIES, POPULATION, DISTRIBUTION, TARGETS (U)

IN ORDER TO DESIGN A FALLOUT SHELTER WHICH OFFERS A REASONABLE PROSPECT OF OCCUPANT SURVIVAL, A QUANTITATIVE ESTIMATE WAS MADE OF THE LEVELS OF BLAST, THERMAL PULSE, INITIAL RADIATION, AND FALLOUT TO WHICH THE SHELTER LOCATION MIGHT BE SUBJECTED. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-624 701 15/3 14/1 12/2 18/3
RESEARCH TRIANGLE INST DURHAM N C OPERATIONS RESEARCH AND ECONOMICS DIV
SENSITIVITY ANALYSIS OF CIVIL DEFENSE SYSTEMS AND COMPONENTS. A COST-EFFECTIVENESS COMPUTER PROCEDURE FOR OPTIMUM ALLOCATION OF FALLOUT SHELTER SYSTEM FUND UNDER UNIFORM OR VARIABLE RISK ASSUMPTIONS. (U)
DESCRIPTIVE NOTE: FINAL REPT., VOL. I,
OCT 65 88P GUESS,FLOYD M. ;
REPT. NO. R-OU-157
TASK: 4113E

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*CIVIL DEFENSE SYSTEM, RADIOACTIVE FALLOUT), (*FALLOUT SHELTERS, COST EFFECTIVENESS), (*COST EFFECTIVENESS, FALLOUT SHELTERS), MATHEMATICAL MODELS, PROGRAMMING(COMPUTERS), FEDERAL BUDGETS, RADIOLOGICAL DOSAGE, NUCLEAR WARFARE, OPERATIONS RESEARCH, STATISTICAL ANALYSIS (U)

THE DYNAMICS OF CIVIL DEFENSE PLANNING AND SYSTEMS EVALUATION REQUIRE A PROCEDURE THAT YIELDS APPROXIMATE ANSWERS TO QUESTIONS CONCERNING EFFECTIVE FALLOUT SHELTER IMPROVEMENT PROGRAMS. TO ACCOMPLISH THIS, A COMPUTERIZED MODEL FOR THE CDC 3600 IS DEVELOPED AND DEMONSTRATED FOR OCD REGION 6. THE MODEL PERMITS AN EVALUATION OF SHELTER IMPROVEMENT PROGRAMS AGAINST ANY FALLOUT ENVIRONMENT, BUT IT IS PARTICULARLY VALUABLE WHEN RISK-TYPE EXPRESSIONS OF THE PROBABLE FALLOUT ENVIRONMENT ARE USED AS INPUTS. USING DETAILED DATA FROM THE NATIONAL FALLOUT SHELTER SURVEY AND EQUALLY DETAILED ESTIMATES OF THE PROBABLE FALLOUT HAZARD IN A SMALL AREA (COUNTIES, IN THE DEMONSTRATION), THE EXTENT TO WHICH AN AREA'S POPULATION IS INADEQUATELY PROTECTED IS DETERMINED. FALLOUT SHELTER SYSTEM FUNDS ARE THEN ALLOCATED TO AREAS OF NEED IN AN OPTIMAL MANNER. THE ALLOCATION EMPLOYS SHELTER COST DATA OBTAINED FROM PHASE 2 OF THE NATIONAL FALLOUT SHELTER SURVEY ON VENTILATION AND SHIELDING IMPROVEMENTS. ESTIMATED COSTS FOR PACKAGE VENTILATION (PKV) AND SHELTER IN NEW CONSTRUCTION ARE ALSO EMPLOYED IN THE DEMONSTRATION IN OCD REGION 6. IN ALL, 14 COST STUDIES ARE RUN, USING SELECTED COMBINATIONS OF THE BUDGET LEVEL, THE FALLOUT RISK LEVEL, ETC. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-624 702 15/3 14/1 12/2 18/3
RESEARCH TRIANGLE INST DURHAM N C OPERATIONS RESEARCH AND ECONOMICS DIV
A SENSITIVITY ANALYSIS OF SELECTED PARAMETERS BASED ON 8 SMSA'S. (U)
DESCRIPTIVE NOTE: FINAL REPT., VOL. 2,
OCT 65 74P SINK,H. RODNEY ;
REPT. NO. R-OU-157
PROJ: RTI-OU-157
TASK: 4113E

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*CIVIL DEFENSE SYSTEMS, RADIOACTIVE FALLOUT), (*FALLOUT SHELTERS, CIVIL DEFENSE SYSTEMS), (*OPERATIONS RESEARCH, CIVIL DEFENSE SYSTEMS), MATHEMATICAL MODELS, PROGRAMMING(COMPUTERS), FEDERAL BUDGETS, RADIOLOGICAL DOSAGE, NUCLEAR WARFARE, COST EFFECTIVENESS, STATISTICAL ANALYSIS (U)

IN ORDER TO PERFORM A SENSITIVITY ANALYSIS OF SELECTED PARAMETERS OF INTEREST IN CIVIL DEFENSE SYSTEMS ANALYSIS, PROBABLE CASUALTIES ARE ESTIMATED FOR 8 SMSA'S OVER A RANGE OF FALLOUT ENVIRONMENTS AND SHELTER UTILIZATION PATTERNS. THE SELECTED PARAMETERS ARE: SMSA POPULATION, POPULATION DENSITY, AND RATIO OF SHELTER SPACES TO POPULATION; FALLOUT ARRIVAL TIME AND REFERENCE INTENSITY; AND RESTRICTIONS ON MOVEMENT OF PEOPLE TO SHELTER, LEADING TO VARYING PATTERNS OF SHELTER UTILIZATION. THE SMSA'S ARE SELECTED BY 'JUDGMENT SAMPLING' AND RANGE IN POPULATION FROM 74,000 TO 408,000. THE FALLOUT ENVIRONMENTS USED RANGE FROM A REFERENCE INTENSITY OF 600 R/HR AND 7 HOURS TIME OF ARRIVAL TO A REFERENCE INTENSITY OF 30,000 R/HR AND 1 HOUR TIME OF ARRIVAL. THE MOVEMENT-TOSHELTER RESTRICTIONS ARE: (1) MOVEMENT RESTRICTED TO THE STANDARD LOCATION (SL) OF RESIDENCE, (2) MOVEMENT RESTRICTED TO WITHIN TWO MILES OF THE SL OF RESIDENCE, AND (3) UNRESTRICTED MOVEMENT TO SHELTER ANYWHERE WITHIN THE SMSA. ALSO, (4) THE TRANSPORTATION ALGORITHM IS USED TO DETERMINE THE OPTIMAL (MINIMUM CASUALTY) ALLOCATION OF PEOPLE TO SHELTER FOR EACH TIME OF ARRIVAL AND REFERENCE INTENSITY COMBINATION. THIS ALLOCATION SERVES AS A BENCHMARK OF IDEALITY AGAINST WHICH TO MEASURE OTHER PATTERNS OF SHELTER UTILIZATION. CASUALTIES ARE COMPUTED FOR EACH OF THE FOUR MOVEMENT PATTERNS OVER THE RANGE OF ATTACK ENVIRONMENTS. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-624 704 15/3 14/1 12/2 18/3
RESEARCH TRIANGLE INST DURHAM N C OPERATIONS RESEARCH AND ECONOMICS DIV
SENSITIVITY ANALYSIS OF CIVIL DEFENSE SYSTEMS AND COMPONENTS. INTRODUCTION AND SUMMARY. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
OCT 65 26P NEBLETT,JOHN H. ;GUESS,FLOYD H. ;SINK,H. RODNEY ;WILLIS,K. E. ;
REPT. NO. R-OU-157
TASK: OCD-4113E

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*CIVIL DEFENSE SYSTEM, RADIOACTIVE FALLOUT), (*OPERATIONS RESEARCH, CIVIL DEFENSE SYSTEM), (*FALLOUT SHELTERS, CIVIL DEFENSE SYSTEMS), COST EFFECTIVENESS, FALLOUT SHELTERS, FEDERAL BUDGETS, MATHEMATICAL MODELS, PROGRAMMING(COMPUTERS), RADIOLOGICAL DOSAGE, NUCLEAR WARFARE, NUCLEAR WARFARE CASUALTIES, STATISTICAL ANALYSIS (U)

THE DOCUMENT SUMMARIZES A THREE PART STUDY CONCERNING SENSITIVITY ANALYSIS OF CD SYSTEMS AND COMPONENTS IN A FALLOUT ENVIRONMENT. IN THE FIRST, A COST/EFFECTIVENESS COMPUTER PROGRAM IS DEVELOPED FOR OPTIMUM ALLOCATION OF FALLOUT SHELTER SYSTEM DEVELOPMENT FUNDS UNDER UNIFORM OR VARIABLE RISK ASSUMPTIONS. THIS PROGRAM, INTENDED FOR USE IN OCD PLANNING STUDIES, IS PROGRAMMED FOR THE CDC 3600. IT IS APPLIED IN EXAMPLE STUDIES USING DATA ON OCD REGION 6. THE SECOND PART OF THE STUDY IS A SENSITIVITY ANALYSIS OF SELECTED PARAMETERS BASED ON 8 SMSAS. IT EMPLOYS THE TRANSPORTATION ALGORITHM IN A STUDY OF MOVEMENT OF PEOPLE TO FALLOUT SHELTERS. THE RESULTS SHOW HOW ESTIMATED CASUALTIES VARY AS MOVEMENT-TO-SHELTER PATTERNS VARY FROM RESTRICTION TO A STANDARD LOCATION UP TO FREE MOVEMENT WITHIN THE SMSA. THEY ALSO INDICATE THAT DETAILED PLANNING FOR SHELTER UTILIZATION CAN BE VERY EFFECTIVE IN REDUCING EXPECTED FALLOUT CASUALTIES WHEN THE NUMBER OF SHELTER SPACES EXCEEDS THE POPULATION OF AN SMSA. IN THE THIRD PART OF THE STUDY, A GENERALIZED SENSITIVITY ANALYSIS IS MADE OF THE PARAMETERS USED IN FALLOUT VULNERABILITY ANALYSIS MODELS WHICH DETERMINE TOTAL DOSE AND EQUIVALENT RESIDUAL DOSE. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-625 402 13/13 13/11 13/3
NAVAL CIVIL ENGINEERING LAB PORT HUENEME CALIF
COLLECTIVE PROTECTOR DESIGN AND DEVELOPMENT. (U)
DESCRIPTIVE NOTE: TECHNICAL NOTE.
NOV 65 22P OLDSON,N. P. IZABLODIL,F. J. &
REPT. NO. NCEL-TN-783
PROJ: Y-F011-08-03-326

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIR INTAKE FILTERS, SHELTERS), VENTILATION, RADIOLOGICAL CONTAMINATION, BIOLOGICAL WARFARE AGENTS, CHEMICAL WARFARE AGENTS, CHARCOAL, PAPER, GASES, ABSORPTION, FIRE-RESISTANT MATERIALS, BLOWERS, AIRBURST, FEASIBILITY STUDIES, CIVIL DEFENSE SYSTEMS (U)

FILTRATION OF VENTILATION AIR IS NECESSARY TO PROTECT PERSONNEL IN A SHELTER AREA AGAINST RADIOLOGICAL, BIOLOGICAL, AND CHEMICAL WARFARE AGENTS. A *COLLECTIVE PROTECTOR* UNIT INCLUDES THREE FILTERS, IN SERIES WITH A BLOWER, WHICH WILL REMOVE CONTAMINATION FROM THE VENTILATING AIR ENTERING THE SHELTER. THE OBJECTIVE OF THIS WORK UNIT IS TO DEVELOP A FAMILY OF MODERN, LIGHTWEIGHT COLLECTIVE PROTECTOR UNITS, WHICH WILL INCORPORATE EASY REPLACEMENT OF FILTER ELEMENTS, AND EASY INTERCHANGE OF POWER UNITS. IN THIS CONNECTION VARIOUS FILTERING MEDIA WERE TO BE INVESTIGATED TO DETERMINE THE FEASIBILITY OF USING SOME OF THE NEW CONCEPTS OF AIR FILTERING. THE RESULTS OF THE STUDY OF FILTERING MEDIA WERE REPORTED IN REFERENCE 2. ACTIVATED CHARCOAL AND PLEATED PAPER WERE DETERMINED TO BE THE MOST FEASIBLE AND ECONOMICAL MEDIA FOR REMOVAL OF GAS AND PARTICULATE MATTER RESPECTIVELY. THE M9A1 COLLECTIVE PROTECTOR (PRESENTLY USED) WEIGHS 637 POUNDS. THE CHARCOAL FILTER, FAN ASSEMBLY, SKIDS AND SUPPORTS, AND INLET PLENUM, WERE SELECTED AS AREAS WHERE SUBSTANTIAL WEIGHT REDUCTION COULD BE REALIZED. A CHARCOAL FILTER WEIGHING 185 POUNDS (AS COMPARED TO 318 POUNDS FOR M9A1) WAS DEVELOPED, AND WILL BE TESTED FOR GAS ABSORPTION AND FIRE RESISTANCE. PREFILTER AND PARTICULATE FILTER ELEMENTS WERE SUBJECTED TO LOW BLAST OVERPRESSURES. WITH REINFORCEMENT THE LIMIT OF OVER-PRESSURE FOR THE PREFILTERS WAS DETERMINED TO BE 2.8 PSI. THE BLOWER DRIVE WAS ARRANGED TO ENABLE THE ELECTRIC MOTOR TO BE REPLACED WITH A GASOLINE ENGINE, AND A DAMPER FOR CLOSE CONTROL OF AIRFLOW HAS BEEN DEVELOPED. (U)

UNCLASSIFIED /BML27

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-625 436 13/1 13/13
STANFORD RESEARCH INST MENLO PARK CALIF
THE STUDY AND EVALUATION OF ABSORPTION-BASED COOLING SYSTEMS FOR USE IN CIVIL DEFENSE SHELTERS. (U)
DESCRIPTIVE NOTE: FINAL REPT., 1 JUL 64-31 JUL 65,
DEC 65 87P AMBROSE,J. E. ;COMMERFORD,G. E. ;
PROJ: 1400 ,SWRI-01-1580
TASK: 1420

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*FALLOUT SHELTERS, COOLING + VENTILATING EQUIPMENT), (*COOLING + VENTILATING EQUIPMENT, FALLOUT SHELTERS), CIVIL DEFENSE SYSTEMS, ABSORPTION, EFFECTIVENESS, COSTS, WEIGHT, FURNACES, FUELS, CONFINED ENVIRONMENTS (U)

A STUDY HAS BEEN MADE OF VARIOUS ABSORPTION CYCLE COOLING UNITS AND ASSOCIATED COMPONENTS WHICH WOULD BE REQUIRED TO MAINTAIN A HABITABLE ATMOSPHERE IN CERTAIN IDENTIFIED CIVIL DEFENSE FALL-OUT SHELTERS, INDEPENDENT OF ANY EXTERNAL ENERGY SOURCES. OF THE MANY CRITERIA WHICH COULD BE APPLIED TO THESE SYSTEMS, FOUR WERE SELECTED AS THE BASES FOR THE FINAL EVALUATION, E.E., COST, ELECTRICAL REQUIREMENT, VOLUME AND WEIGHT. THE SELECTED SYSTEM CONSISTS OF THE AQUEOUS AMMONIA ABSORPTION CYCLE COOLING UNIT WITH HEAT REJECTION DIRECTLY TO AMBIENT AIR FROM FINNED-TUBE CONDENSER AND ABSORBER. THIS UNIT PRODUCES CHILLED WATER WHICH IS CIRCULATED THROUGH A FINNED-TUBE CONDITIONING COIL WITHIN THE SHELTER AREA. SHELTER HEAT IS TRANSFERRED TO THE CHILLED WATER BY BLOWING SHELTER AIR AND VENTILATION AIR THROUGH THE CONDITIONING COIL. HEAT TO OPERATE THE ABSORPTION UNIT IS SUPPLIED BY COMBUSTION GASES FROM A FURNACE DESIGNED TO BURN A VOLATILE-PRODUCING FUEL WITH COAL AS THE PREFERRED FUEL. MANUAL POWER IS APPLIED TO PUMP THE CHILLED WATER AND TO CIRCULATE SHELTER AIR AND COOLING AIR. A SUITABLY DESIGNED FURNACE NEEDS TO BE DEVELOPED, AND THE NORMALLY GAS-FIRED ABSORPTION UNIT MUST BE ADAPTED TO THE FURNACE. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-626 984 6/8 15/3
WESTERN REGIONAL RESEARCH LAB ALBANY CALIF
BULGUR WAFER AND ADJUNCTS FOR FALLOUT SHELTER RATIONS. (U)
DESCRIPTIVE NOTE: ANNUAL REPT., 1 JUL 64-30 JUN 65,
NOV 65 48P SHEPHERD,ALLAN D. ;
FERREL,ROBERT E. ;HORVAT,ROBERT J. ;
NG,HAWKINS ;LANE,WILLIAM G. ;
CONTRACT: OCD-OS-62-54
PROJ: OCD-1300
TASK: 1310

UNCLASSIFIED REPORT

DESCRIPTORS: (*FALLOUT SHELTERS, FOOD), (*FOOD, STORAGE), WHEAT, LINOLEIC ACID, OXIDATION, TASTE, TESTS, ODORS, STABILITY, VAPORS, CHROMATOGRAPHIC ANALYSIS, MASS SPECTROSCOPY, PREPARATION, DEGRADATION, PACKAGING, CIVIL DEFENSE SYSTEMS (U)
IDENTIFIERS: ORGANOLEPTIC TESTS (U)

VAPORS FROM RANCIDIFYING BULGUR AND FROM AUTOXIDIZED METHYL LINOLEATE, A MODEL COMPOUND, ARE BEING ANALYZED AND IDENTIFIED BY GAS LIQUID CHROMATOGRAPHY AND MASS SPECTROMETRY. THIRTY-ONE COMPOUNDS HAVE NOW BEEN TENTATIVELY IDENTIFIED IN STUDIES ON THE MODEL SYSTEM. THE PRESENCE OF SOME OF THESE COMPOUNDS IN VAPORS FROM RANCID BULGUR HAS BEEN VERIFIED. WE HAVE MADE FURTHER STUDY OF GUN-PUFFING AND HOT-AIR PUFF-DRYING AS ALTERNATE MEANS OF PREPARING WHEAT INGREDIENTS FOR THE WAFER. DEVELOPMENT OF A JELLY THAT SETS WITH COLD WATER ESSENTIALLY CONCLUDES DEVELOPMENT WORK ON ADJUNCTS. LONG-TERM (FIVE-YEAR) STORAGE STUDIES OF BULGUR WAFERS AND ADJUNCTS ARE CONTINUING. TASTE PANEL EVALUATIONS TO DATE INDICATE THAT SHELF LIFE OF BOTH TYPES OF PRODUCTS CAN BE EXTENDED WITH NITROGEN-PACKAGING. THE USE OF MALT INSTEAD OF CORN SYRUP IN WAFER FORMULATION AND OF IN-PACKAGE DESICCANTS WITH ADJUNCTS ALSO EXTENDS SHELF LIFE. CHEMICAL-PHYSICAL MEASUREMENTS OF CHANGES TAKING PLACE ARE BEING MADE ON DUPLICATES OF THE SAMPLES EVALUATED BY THE TASTE PANEL TO FIND A TEST THAT WILL CORRELATE WITH ORGANOLEPTIC EVALUATIONS, BUT AS YET NO MEANINGFUL CORRELATIONS HAVE BEEN FOUND. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-629 633 13/1 15/3 13/13
GENERAL AMERICAN RESEARCH DIV GENERAL AMERICAN TRANSPORTATION CORP NILES ILL
SHELTER PACKAGE VENTILATION KIT. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
OCT 65 111P LIBOVICZ,BASIL A. ;
BEHLS,HERMAN F. ;
REPT. NO. GARD-1244,
PROJ: 1423A,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*FALLOUT SHELTERS, VENTILATION), (*VENTILATION, FALLOUT SHELTERS), PORTABLE, VENTILATION FANS, VENTILATION DUCTS, PLASTICS, CIVIL DEFENSE SYSTEM, MECHANICAL DRAWINGS, PERFORMANCE(ENGINEERING, (U)

A PORTABLE VENTILATION SYSTEM THAT CAN BE DRIVEN MANUALLY OR BY AN ELECTRIC MOTOR WAS DEVELOPED FOR USE IN CIVIL DEFENSE FALLOUT SHELTERS. THIS PACKAGE VENTILATION KIT INCLUDES A FAN ASSEMBLY AND DRIVE MODULES WHICH CAN BE ASSEMBLED AND OPERATED BY UNTRAINED PERSONNEL. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-629 634 13/1 13/13 15/3
GENERAL AMERICAN RESEARCH DIV GENERAL AMERICAN TRANSPORTATION CORP NILES ILL
SHELTER PACKAGE VENTILATION KIT. (U)
DESCRIPTIVE NOTE: SUMMARY RESEARCH REPT.
OCT 65 18P
REPT. NO. GARD-1244.

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-629 633.

DESCRIPTORS: (*FALLOUT SHELTERS, VENTILATION), (*VENTILATION, FALLOUT SHELTERS), PORTABLE, PERFORMANCE(ENGINEERING), PACKAGING, VENTILATION FANS, DRIVES, VENTILATION DUCTS, PLASTIC, DESIGN, MECHANICAL DRAWINGS, CIVIL DEFENSE SYSTEMS, COSTS (U)

CERTAIN FALLOUT SHELTERS IN THE UNITED STATES REQUIRE VENTILATION SYSTEMS CAPABLE OF SUPPLYING FROM 5 TO ABOUT 30 CUBIC FEET PER MINUTE OF OUTSIDE AIR PER PERSON SHELTERED IN ORDER TO ACHIEVE A HIGH CONFIDENCE OF MAINTAINING TOLERABLE CONDITIONS OF TEMPERATURE AND HUMIDITY DURING HOT WEATHER. THE GOALS OF THIS DEVELOPMENT PROGRAM ARE PORTABILITY, LOW COST, MANUAL AND ELECTRIC DRIVE, EASE AND UNIVERSALITY OF APPLICATION. THE RESULTING PACKAGE VENTILATION KIT (PVK) IS A COMPLETE PACKAGED MECHANICAL VENTILATION SYSTEM THAT IS PORTABLE, CAN BE ASSEMBLED AND DEPLOYED BY UNTRAINED PERSONNEL, AND CAN BE DRIVEN EITHER ELECTRICALLY OR BY HUMAN POWER. THE PVK CONSISTS OF TWO BASIS PACKAGES -- A FAN ASSEMBLY AND DRIVE MODULE. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-629 736 15/3 13/13
PROTECTIVE STRUCTURES DEVELOPMENT CENTER FORT BELVOIR VA
FAMILY SHELTER WOOD A-FRAME. (U)
DESCRIPTIVE NOTE: FINAL TECHNICAL REPT.,
OCT 65 18P DEMBO,MICHAEL M. ;
LAMB,HERBERT C. ;
REPT. NO. PSDC-TR-10,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*FALLOUT SHELTERS, CONSTRUCTION),
CIVIL DEFENSE SYSTEMS, MATERIALS, WOOD,
RADIOACTIVE FALLOUT, SHIELDING, VENTILATION,
BLOWERS, POWER SUPPLIES, COSTS (U)

CONSTRUCTION PLANS, DETAILS AND BILL OF MATERIALS FOR A SIMPLE DUAL-PURPOSE WOOD A-FRAME TYPE FAMILY FALLOUT SHELTER ARE PRESENTED. SHELTER FOR 10 PERSONS, BASED ON MINIMUM OCD SHELTER SPACE REQUIREMENTS, IS PROVIDED. RADIATION SHIELDING TO PROVIDE A PROTECTION FACTOR OF 100 IS PROVIDED BY EARTH MOUNDING OVER THE WOOD FRAME. VENTILATION FOR THE OCCUPIED SHELTER WOULD HAVE TO BE PROVIDED THROUGH MANUAL OR MANUAL-ELECTRIC BLOWERS DEPENDING ON AVAILABILITY OF ELECTRIC POWER DURING THE OCCUPANCY PERIOD. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-629 914 5/1 13/13 5/9
AMERICAN INSTITUTES FOR RESEARCH PITTSBURGH PA INST FOR PERFORMANCE TECHNOLOGY
INTEGRATED GUIDANCE FOR SHELTER MANAGEMENT. THE SELECTION AND RECRUITMENT OF SHELTER MANAGERS. (U)
DESCRIPTIVE NOTE: TECHNICAL REPT.,
JUN 65 87P SMITH,ROBERT W. ;
JEFFREYS,FRANK B. ;
REPT. NO. AIR-D93B-6/65-TR(A-1),
PROJ: 1533A,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*FALLOUT SHELTERS, MANAGEMENT ENGINEERING), (*MANAGEMENT ENGINEERING, FALLOUT SHELTERS), (*CIVIL DEFENSE PERSONNEL, PERSONNEL MANAGEMENT), SELECTION, RECRUITING, CIVIL DEFENSE SYSTEMS, INSTRUCTION MANUALS, EFFECTIVENESS (U)

THE DEVELOPMENT, FIELD-VERIFICATION, AND REVISION OF GUIDANCE MATERIALS FOR THE SELECTION AND RECRUITMENT OF SHELTER MANAGERS SUITABLE FOR USE BY LOCAL CIVIL DEFENSE PERSONNEL WAS THE PURPOSE OF THE PROJECT. THE SCOPE OF EXISTING GUIDANCE WAS REDUCED BY ELIMINATING BOTH THE TRAINING GUIDANCE AND THE DISCUSSION OF THE SUPPORTING METHODOLOGY. A SAMPLE OF TEN REPRESENTATIVE COMMUNITIES WAS SELECTED TO USE THE GUIDANCE TO IMPLEMENT A SELECTION AND RECRUITMENT PROGRAM. DATA COLLECTED INCLUDED: PREVIOUS SELECTION AND RECRUITMENT EFFORTS, COMMENTS ON THE MATERIALS, EFFECTIVENESS OF SELECTION AND RECRUITMENT PROGRAMS IMPLEMENTING THE GUIDANCE, AND INFORMATION ON THE COMMUNITY. ALTHOUGH RESPONSE TO THE PRINCIPLES WAS FAVORABLE, CONSIDERABLE DIFFICULTY WAS ENCOUNTERED IN CONVINCING THE LOCAL CIVIL DEFENSE PERSONNEL TO USE PERSONAL CONTACT IN SELECTION AND RECRUITMENT. IN THOSE COMMUNITIES WHERE THE GUIDANCE WAS APPLIED, THE RESULTS INDICATED THAT THE GUIDE'S RECOMMENDED METHODS ARE SUPERIOR TO THE MORE TRADITIONAL METHOD OF GENERAL REQUESTS FOR VOLUNTEERS. FURTHER VERIFICATION OF THE GUIDANCE WAS GAINED FROM OBSERVING A PILOT RECRUITMENT PROGRAM CONDUCTED BY REGION, STATE, AND LOCAL CIVIL DEFENSE WORKERS IN A WESTERN CITY. (AUTHOR) (U)

D. C REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-629 915 5/1 13/13 5/9
AMERICAN INSTITUTES FOR RESEARCH PITTSBURGH PA INST FOR PERFORMANCE TECHNOLOGY
INTEGRATED GUIDANCE FOR SHELTER MANAGEMENT. THE SELECTION AND RECRUITMENT OF SHELTER MANAGERS. (U)
DESCRIPTIVE NOTE: SUMMARY TECHNICAL REPT.,
JUN 65 6P SMITH,ROBERT W. ;
JEFFREYS,FRANK B. ;
REPT. NO. AIR-D938-6/65-TR(A-11),

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*FALLOUT SHELTERS, MANAGEMENT ENGINEERING), (*MANAGEMENT ENGINEERING, FALLOUT SHELTERS), (*CIVIL DEFENSE PERSONNEL, PERSONNEL MANAGEMENT), SELECTION, RECRUITING, CIVIL DEFENSE SYSTEMS, INSTRUCTION MANUALS, EFFECTIVENESS (U)

THE GUIDANCE MATERIALS FOR SELECTION AND RECRUITMENT THAT WERE VERIFIED AND EVALUATED DURING THIS STUDY WERE BASED UPON PORTIONS OF THE A.I.R REPORT, 'THE RECRUITMENT, SELECTION, AND TRAINING OF SHELTER MANAGERS AND CORE STAFFS' (ENINGER AND FETTER, 1963). THAT REPORT WAS MODIFIED IN A NUMBER OF WAYS FOR APPLICATION TO ACTUAL SHELTER SITUATIONS. THE CRITICAL COMMENTS INDICATED THAT MOST OF THE REVIEWERS FELT THAT (1) THE GUIDE WAS APPLICABLE TO BOTH THE REVIEWER'S SHELTER SITUATION AND TO OTHER SHELTER SITUATIONS, AND (2) MOST OF THE CONCEPTS PRESENTED IN THE GUIDE WERE USEFUL. HOWEVER, THE REVIEWERS CONSISTENTLY CLASSED THE RECOMMENDED DATA-GATHERING FORM AS TOO BURDENSOME AND TOO IDEALISTIC. THE FINDINGS IN THE STUDY WERE REFLECTED IN A MAJOR REVISION OF THE GUIDE, NOW ENTITLED, 'THE SELECTION AND RECRUITMENT OF SHELTER MANAGERS,' (SMITH AND JEFFREYS, 1965) (AD-629 914). THE SCOPE OF THE GUIDANCE WAS REDUCED BY SEPARATING THE GUIDANCE FOR SELECTION AND RECRUITMENT FROM TRAINING AND ELIMINATING THE DISCUSSION OF THE SUPPORTING RESEARCH METHODOLOGY. THE GUIDE PROVIDES MORE DETAILED RECOMMENDATIONS IN A SIMPLE, 'HOW-TO' FORMAT. SPECIFIC PROCEDURES, RATHER THAN GENERAL PRINCIPLES, ARE GIVEN FOR BOTH SELECTION AND RECRUITMENT, PROVIDING COMPREHENSIVE GUIDANCE APPLICABLE TO THE ENTIRE RANGE OF SHELTER SITUATIONS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-629 926 5/1 13/13
AMERICAN INSTITUTES FOR RESEARCH PITTSBURGH PA INST FOR PERFORMANCE TECHNOLOGY
INTEGRATED GUIDANCE FOR SHELTER MANAGEMENT. PLANNING A GROUP SHELTER. (U)
DESCRIPTIVE NOTE: TECHNICAL REPT.,
JUN 65 31P SMITH,ROBERT W. ILASKY,MARY ANN ;
REPT. NO. AIR-D93C-6/65-TR(1),

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*FALLOUT SHELTERS, MANAGEMENT ENGINEERING), (*MANAGEMENT ENGINEERING, FALLOUT SHELTERS), (*MANAGEMENT PLANNING, FALLOUT SHELTERS), CIVIL DEFENSE SYSTEMS, DECISION MAKING, INSTRUCTION MANUALS, TRAINING (U)

THE FIELD-VERIFICATION AND REVISION OF GUIDANCE MATERIALS FOR INDIVIDUAL SHELTER PLANNING WAS THE PURPOSE OF THE REPORT. THE EXISTING PLANNING GUIDANCE WAS MODIFIED TO REFLECT CHANGES IN TECHNOLOGY AND THE SHELTER PLANNING PHILOSOPHY, AND A SAMPLE BASIC SHELTER PLAN WAS DEVELOPED FOR INCLUSION IN THE GUIDE. THE SAMPLE CONSISTED OF SIXTEEN COMMUNITIES SELECTED TO REVIEW AND APPLY THE GUIDANCE. FOUR PLANS WERE WRITTEN DURING THE APPLICATION OF THE GUIDANCE. THREE OF THESE PLANS ADHERED CLOSELY TO THE AIR GUIDANCE MATERIALS AND THE FOURTH PLAN DEALT PRIMARILY WITH SHELTER PROCEDURES. THE CRITICAL COMMENTS MADE BY THE REVIEWERS INDICATED THAT THERE WERE NO TECHNICAL INACCURACIES AND THAT THE TECHNICAL BACKGROUND INFORMATION IN THE GUIDE OVERLAPPED WITH THAT PROVIDED IN SHELTER MANAGEMENT TRAINING. THE FINDINGS IN THIS STUDY WERE REFLECTED IN A REVISION OF THE GUIDE. THE GUIDE HAS GREATER EMPHASIS ON SHELTER MANAGEMENT, A SECTION DEALING WITH PLANNING FOR SHELTER SECURITY, AND MORE INFORMATION ON CLOSING THE SHELTER. MINOR REVISIONS WERE MADE TO REFLECT CHANGES IN TECHNOLOGY AND CHANGES IN THE FEDERAL PROGRAM. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-629 927 5/1 13/13
AMERICAN INSTITUTES FOR RESEARCH PITTSBURGH PA INST FOR PERFORMANCE TECHNOLOGY
INTEGRATED GUIDANCE FOR SHELTER MANAGEMENT. PLANNING A GROUP SHELTER. (U)
DESCRIPTIVE NOTE: SUMMARY OF TECHNICAL REPT.,
JUN 65 6P SMITH,ROBERT W. ;LASKY,MARY ANN ;
REPT. NO. AIR-D93C-6/65-TR(III).

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*FALLOUT SHELTERS, MANAGEMENT ENGINEERING), (*MANAGEMENT ENGINEERING, FALLOUT SHELTERS), (*MANAGEMENT PLANNING, FALLOUT SHELTERS), CIVIL DEFENSE SYSTEMS, INSTRUCTION MANUALS, EFFECTIVENESS (U)

DURING THE COURSE OF A PREVIOUS PROJECT FOR THE OFFICE OF CIVIL DEFENSE, THE AMERICAN INSTITUTES FOR RESEARCH DEVELOPED A GUIDANCE DOCUMENT FOR INDIVIDUAL SHELTER PLANNING ENTITLED PLANNING GUIDES FOR DUAL-PURPOSE SHELTERS (SMITH AND LASKY, 1963) (AD-412 342). THE INFORMATION PROVIDED IN THAT DOCUMENT WAS VALIDATED THROUGH REVIEW BY KNOWLEDGABLE CIVIL DEFENSE AUTHORITIES. THE QUESTION REMAINED, HOWEVER, AS TO WHETHER LOCAL CIVIL DEFENSE PERSONNEL COULD SUCCESSFULLY APPLY THIS GUIDANCE TO THE PREPARATION OF ACTUAL SHELTER PLANS. THE PURPOSE OF THIS PROJECT WAS TO CONDUCT FIELD VERIFICATION OF THE PLANNING GUIDE AND TO REVISE THE DOCUMENT AS REQUIRED. THE FINDINGS IN THIS STUDY WERE REFLECTED IN A MAJOR REVISION OF THE GUIDE, NOW ENTITLED PLANNING A GROUP SHELTER (SMITH AND LASKY, 1965) (AD-629 926). CHAPTER 1 OF THE GUIDE WAS REVISED TO CLARIFY THE NATURE OF SHELTER PLANNING, SO THAT IT WOULD RECEIVE PROPER CONSIDERATION BY SHELTER PLANNERS. THE SECOND CHAPTER OF THE GUIDE WAS REVISED TO EMPHASIZE PLANNING FOR SHELTER MANAGEMENT. A SECTION DEALING WITH PLANNING FOR SHELTER SECURITY WAS ADDED TO THE GUIDE. THE SECTION ON WARNING AND SHELTER ENTRY INCLUDES MORE INFORMATION ON CLOSING THE SHELTER. MINOR REVISIONS WERE MADE TO REFLECT CHANGES IN TECHNOLOGY AND CHANGES IN THE FEDERAL PROGRAM WHICH OCCURRED DURING THE COURSE OF THIS STUDY. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-629 935 5/1 13/13
AMERICAN INSTITUTES FOR RESEARCH PITTSBURGH PA INST FOR BERFORMANCE TECHNOLOGY
INTEGRATED GUIDANCE FOR SHELTER MANAGEMENT. SHELTER MANAGER'S GUIDE. (U)
DESCRIPTIVE NOTE: TECHNICAL REPT.,
JUN 65 26P BRANDEGEE,ADA S. ;
BEND,EMIL ;
REPT. NO. AIR-D93B-6/65-TR(C-1),
PROJ: 1533A,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*FALLOUT SHELTERS, MANAGEMENT ENGINEERING), (*MANAGEMENT ENGINEERING, FALLOUT SHELTERS), INSTRUCTION MANUALS, CIVIL DEFENSE SYSTEMS, DECISION MAKING, DOCUMENTATION (U)

THE PURPOSE OF THE PROJECT WAS TO DEVELOP AND EVALUATE IN-SHELTER GUIDANCE MATERIALS WHICH ANY FALLOUT SHELTER MANAGER, TRAINED OR UNTRAINED, COULD USE AS AN OPERATIONAL MANAGEMENT GUIDE. AN INITIAL VERSION OF THE 'SHELTER MANAGER'S GUIDE' WAS USED BY BOTH TRAINED MANAGERS AND EMERGENT LEADERS IN 24- AND 48-HOUR HABITABILITY STUDIES CONDUCTED BY THE AMERICAN INSTITUTES FOR RESEARCH. AFTER THE 'SHELTER MANAGER'S GUIDE' WAS REVISED, IT WAS EVALUATED IN AN EXPERIMENTAL COMPARISON WITH OTHER TYPES OF GUIDANCE MATERIALS. THE FINAL PRODUCT IS ARRANGED BY PRIORITY OF MANAGEMENT DECISIONS AND ACTIONS WITHIN FIVE SHELTER PHASES: ENTRY, INITIAL ORGANIZATION AND OPERATIONS, ROUTINE, TEMPORARY EMERGENCE, AND CONTINGENCIES (EMERGENCIES). IT PROVIDES THE MANAGEMENT DECISION AND ACTIONS NECESSARY TO ORGANIZE AND OPERATE A FALLOUT SHELTER, AND SUPPLIES THE INFORMATION WHICH THE MANAGER NEEDS TO SUPPORT THESE DECISIONS AND ACTIONS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-629 939 5/1 13/13
AMERICAN INSTITUTES FOR RESEARCH PITTSBURGH PA INST FOR PERFORMANCE TECHNOLOGY
INTEGRATED GUIDANCE FOR SHELTER MANAGEMENT. VOLUME I. INTRODUCTION TO SHELTER MANAGEMENT. (U)
JUN 65 300P BEND,EMIL ;COLLINS,ROBERT A. ;
REPT. NO. AIR-D93B-6/65-RP(B).
PROJ: 1533A.

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*FALLOUT SHELTERS, MANAGEMENT ENGINEERING), (*MANAGEMENT ENGINEERING, FALLOUT SHELTERS), MANAGEMENT PLANNING, SAFETY, FOOD, PUBLIC HEALTH, SOCIAL PSYCHOLOGY, RADIOBIOLOGY, TRAINING, CIVIL DEFENSE SYSTEMS, COMMUNICATION SYSTEMS (U)

THE VOLUME IS DESIGNED AS A TRAINING TEXT. IT PROVIDES AN OVERVIEW OF THE SCOPE AND NATURE OF THE SHELTER MANAGER'S DUTIES AND RESPONSIBILITIES. THE TEXT EMPHASIZES GENERAL MANAGEMENT PRINCIPLES AND CONSIDERATIONS, RATHER THAN SPECIFIC OPERATIONAL PROCEDURES. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-629 940 5/1 13/13
AMERICAN INSTITUTES FOR RESEARCH PITTSBURGH PA INST FOR PERFORMANCE TECHNOLOGY
INTEGRATED GUIDANCE FOR SHELTER MANAGEMENT. VOLUME II. PLANNING A GROUP SHELTER. (U)
DESCRIPTIVE NOTE: A PLANNING GUIDE,
JUN 65 167P SMITH,ROBERT W. ;
LASKY,MARY ANN ;
REPT. NO. AIR-D93C 6/65-RP.

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-629 939.

DESCRIPTORS: (•FALLOUT SHELTERS, MANAGEMENT ENGINEERING), (•MANAGEMENT ENGINEERING, FALLOUT SHELTERS), (•MANAGEMENT PLANNING, FALLOUT SHELTERS), RADIATION MONITORS, CIVIL DEFENSE SYSTEMS, MAINTENANCE, AIR CONDITIONING EQUIPMENT, SAFETY, FOOD, LIGHTING EQUIPMENT, COMMUNICATION SYSTEMS, SANITARY ENGINEERING (U)

THE VOLUME DEALS WITH THE PEACETIME RESPONSIBILITIES OF THE SHELTER MANAGER WHICH FOCUS UPON THE ACHIEVEMENT AND MAINTENANCE OF A STATE OF OPERATIONAL READINESS OF A SHELTER FACILITY. THE PLANNING GUIDE DISCUSSES THE PRINCIPAL FACTORS THAT MUST BE CONSIDERED IN PLANNING AND DEVELOPING A GROUP SHELTER. IT ALSO IDENTIFIES METHODS FOR MEETING THE REQUIREMENTS ASSOCIATED WITH THESE FACTORS, AND PRESENTS SPECIFIC INFORMATION THAT WOULD PERMIT THE SHELTER MANAGER TO SELECT METHODS APPROPRIATE TO HIS NEEDS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-629 941 5/1 13/13
AMERICAN INSTITUTES FOR RESEARCH PITTSBURGH PA INST FOR PERFORMANCE TECHNOLOGY
INTEGRATED GUIDANCE FOR SHELTER MANAGEMENT. VOLUME III. SHELTER MANAGER'S GUIDE. (U)
DESCRIPTIVE NOTE: GUIDANCE FOR IN-SHELTER USE,
JUN 65 213P BRANDEGEE,ADA S. ;
BEND,EMIL ;
REPT. NO. AIR-D93B-6/65-RP(C),
PROJ: 1533A,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-629 940.

DESCRIPTORS: (*FALLOUT SHELTERS, MANAGEMENT ENGINEERING), (*MANAGEMENT ENGINEERING, FALLOUT SHELTERS), INSTRUCTION MANUALS, DECISION MAKING, CIVIL DEFENSE SYSTEMS, DISASTERS, NUCLEAR WARFARE, SURVIVAL, MAINTENANCE (U)

THE VOLUME WAS DEVELOPED FOR USE DURING THE PERIOD OF SHELTER OCCUPANCY. THIS MEANS THAT THE CONTENT, AS WELL AS ITS ORGANIZATION AND PRESENTATION, WAS DESIGNED FOR OPTIMUM USEFULNESS UNDER EMERGENCY CONDITIONS. THE GUIDE LISTS PRIORITY-ORDERED MANAGEMENT ACTIONS AND DECISIONS, ARRANGED ACCORDING TO THE PHASES OF A SHELTER STAY. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-630 015 5/1 13/13 5/9
AMERICAN INSTITUTES FOR RESEARCH PITTSBURGH PA INST FOR PERFORMANCE TECHNOLOGY
INTEGRATED GUIDANCE FOR SHELTER MANAGEMENT.
INTRODUCTION TO SHELTER MANAGEMENT. (U)
DESCRIPTIVE NOTE: TECHNICAL REPT.,
JUN 65 17P BEND,EMIL ;COLLINS,ROBERT A.
;
REPT. NO. AIR-D93B-6/65-TR(B-1),
PROJ: 1533A

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*FALLOUT SHELTERS, MANAGEMENT ENGINEERING), (*MANAGEMENT ENGINEERING, FALLOUT SHELTERS), CIVIL DEFENSE SYSTEMS, TRAINING, TEXTBOOKS (U)

THE PRODUCT OF THE RESEARCH DESCRIBED IN THIS TECHNICAL REPORT WAS A TRAINING TEXT ENTITLED 'INTRODUCTION TO SHELTER MANAGEMENT.' THE TEXT WAS DESIGNED FOR USE IN END-PRODUCT SHELTER MANAGEMENT TRAINING. THE TECHNICAL REPORT ALSO BRIEFLY DESCRIBES SEVERAL DIFFERENT APPROACHES TO SHELTER MANAGEMENT TRAINING INTO WHICH THE TRAINING TEXT CAN BE FIT. THE RECOMMENDED APPROACH WAS TO USE THE TEXT AS BACKGROUND READING, AND TO USE CLASS MEETINGS FOR DISCUSSIONS OF SPECIFIC PROBLEMS AND GUIDANCE PERTINENT TO THE PARTICULAR GROUP OF SHELTER MANAGER TRAINEES ATTENDING THE COURSE. THE CONTENT AND ORGANIZATION OF THE TEXTBOOK ARE BRIEFLY DESCRIBED IN THE REPORT, AND SUGGESTIONS ARE OFFERED FOR FURTHER RESEARCH IN THE FIELD OF SHELTER MANAGEMENT TRAINING. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-630 016 5/1 13/13 5/9
AMERICAN INSTITUTES FOR RESEARCH PITTSBURGH PA INST FOR PERFORMANCE TECHNOLOGY
INTEGRATED GUIDANCE FOR SHELTER MANAGEMENT.
INTRODUCTION TO SHELTER MANAGEMENT. (U)
DESCRIPTIVE NOTE: SUMMARY OF TECHNICAL REPT.,
JUN 65 6P BEND,EMIL ;COLLINS,ROBERT A.
;
REPT. NO. AIR-D93B-6/65-TR(B-11),

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*FALLOUT SHELTERS, MANAGEMENT ENGINEERING), (*MANAGEMENT ENGINEERING, FALLOUT SHELTERS), CIVIL DEFENSE SYSTEMS, TRAINING, STANDARDIZATION, TEXTBOOKS (U)

THE TWO-FOLD GOAL OF THE PROJECT WAS TO PREPARE A STANDARDIZED SHELTER MANAGEMENT TEXTBOOK AND TO DEVELOP AN APPROACH TO SHELTER MANAGEMENT TRAINING THAT WOULD PERMIT THE TEXT TO SERVE THE WIDEST POSSIBLE RANGE OF TRAINING SITUATIONS. A NUMBER OF INDIVIDUALS ASSOCIATED WITH THE TRAINING OF SHELTER MANAGERS HAVE ATTESTED TO THE NEED OF A STANDARDIZED INTRODUCTION TO SHELTER MANAGEMENT. IT WAS FELT THAT THE DEVELOPMENT OF A TEXT WOULD BE A STEP TOWARDS THE GOAL OF STANDARDIZED SHELTER MANAGEMENT TRAINING. THERE WERE A NUMBER OF PROBLEMS INHERENT IN THE DEVELOPMENT OF SUCH A STANDARDIZED APPROACH. AMONG THESE PROBLEMS WERE: (1) THE GREAT DIVERSITY IN SHELTER MANAGEMENT STUDENTS, IN TERMS OF EDUCATIONAL BACKGROUND AND OCCUPATION; (2) THE WIDE VARIATION IN CURRICULUM OF CURRENT SHELTER MANAGEMENT TRAINING; AND (3) THE VARIETY OF CONDITIONS IN LOCAL COMMUNITIES, INCLUDING SHELTER CONFIGURATIONS, ENVIRONMENTAL, POLITICAL, AND SOCIAL DIFFERENCES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-630 052 5/1 13/13 5/9
AMERICAN INSTITUTES FOR RESEARCH PITTSBURGH PA INST FOR PERFORMANCE TECHNOLOGY
INTEGRATED GUIDANCE FOR SHELTER MANAGEMENT. SHELTER MANAGER'S GUIDE. (U)
DESCRIPTIVE NOTE: SUMMARY OF TECHNICAL REPT.,
JUN 65 8P BRANDEGEE,ADA S. ;
BEND,EMIL ;
REPT. NO. AIR-D93B-6/65-TR(C-II),

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*FALLOUT SHELTERS, MANAGEMENT ENGINEERING), (*MANAGEMENT ENGINEERING, FALLOUT SHELTERS), CIVIL DEFENSE SYSTEMS, DECISION MAKING, CIVIL DEFENSE PERSONNEL, TRAINING, INSTRUCTION MANUALS, SURVIVAL (U)

THE GOAL OF THE PROJECT WAS TO PREPARE AND TEST A 'SHELTER MANAGER'S GUIDE' WHICH COULD BE USED IN-SHELTER BY EITHER TRAINED OR NTRAINED SHELTER MANAGERS TO ORGANIZE AND RUN THE SHELTER. THE GUIDE MUST SUPPLY THREE KINDS OF READY INFORMATION: (1) THE STEP-BY-STEP DECISIONS AND ACTIONS WHICH A MANAGER MUST MAKE TO ORGANIZE AND OPERATE A FALLOUT SHELTER; (2) IMMEDIATE ANSWERS TO CRITICAL SHELTER PROBLEMS OR CONTINGENCIES WHICH MAY SUDDENLY ARISE; AND (3) THE SUPPORTING DETAILS, INCLUDING: ACTUAL PROCEDURES, PERSONNEL AND EQUIPMENT REQUIREMENTS; AND BACKGROUND INFORMATION NEEDED TO IMPLEMENT THE DECISIONS AND ACTIONS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-631 424 13/13
IIT RESEARCH INST CHICAGO ILL TECHNOLOGY CENTER
AN INVESTIGATION OF MINIMAL EQUIPMENT NEEDS IN
PERSONNEL SHELTERS. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
JUN 65 496P HAVERS,JOHN A. ;
MONK,CLAIRE B. ,JR.;KOELLER,ERICH H. ;
PROJ: 1200,IITRI-M6064(4)
TASK: 1210,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*FALLOUT SHELTERS, DESIGN),
OPTIMIZATION, CIVIL DEFENSE SYSTEMS,
PERFORMANCE(ENGINEERING), PERSONNEL, COOLING
+ VENTILATING EQUIPMENT, COSTS, SYSTEMS
ENGINEERING, EXPLOSION EFFECTS, PHYSIOLOGY,
SANITARY ENGINEERING (U)

THE INVESTIGATION OF MINIMAL EQUIPMENT NEEDS
INCLUDED AN EXAMINATION OF THE PERFORMANCE
REQUIREMENTS FOR SHELTER EQUIPMENT SYSTEMS,
CONSIDERING THESE IN RELATION TO THE ATTACK-INDUCED
ENVIRONMENTAL FACTORS AND TO THE ANTICIPATED
CONDITIONS OF SHELTER OCCUPANCY. WITH THESE
PERFORMANCE REQUIREMENTS ONCE ESTABLISHED, SUITABLE
EQUIPMENT SYSTEMS ARE THEN IDENTIFIED. HERE A
MAJOR EMPHASIS IS PLACED UPON THE MINIMIZATION OF
EQUIPMENT NEEDS, AS DICTATED BY THE RESEARCH CONCEPT
OF THE 'AUSTERE' SHELTER. FINALLY, FOR ILLUSTRATIVE
PURPOSES, EQUIPMENT SYSTEMS ARE DESCRIBED FOR THE
THREE SHELTER SIZES AND FOR FOUR IDENTIFIED CLIMATIC
REGIONS. APPROXIMATE ESTIMATES OF EQUIPMENT COSTS
ARE INCLUDED. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-631 442 13/13
IIT RESEARCH INST CHICAGO ILL TECHNOLOGY CENTER
AN INVESTIGATION OF MINIMAL EQUIPMENT NEEDS IN PERSONNEL SHELTERS. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
JUN 65 7P HAVERS,JOHN A. ;MONK,CLAIRE B. ,JR.;KOELLER,ERICH H. ;
PROJ: IITRI-M6064(4)

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-631 424.

DESCRIPTORS: (*FALLOUT SHELTERS, DESIGN), CIVIL DEFENSE SYSTEMS, SURVIVAL, EXPLOSION EFFECTS, PHYSIOLOGY, SANITARY ENGINEERING, HAZARDS, COOLING + VENTILATING EQUIPMENT (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-632 351 6/8
MIDWEST RESEARCH INST KANSAS CITY MO
FURTHER STUDIES ON THE DEVELOPMENT OF A NUTRITIONALLY ADEQUATE FALLOUT SHELTER RATION. (U)
DESCRIPTIVE NOTE: FINAL REPT., PT. 1, 26 MAR 64-31 MAR 66,
MAR 66 38P NEWLIN,HARRISON E. ;
HAYES,GENE L. ;
PROJ: 1300,MRI-2769-B
TASK: 1310,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*FOOD, FALLOUT SHELTERS), NUTRITION, BREAD, CIVIL DEFENSE SYSTEMS, DEHYDRATED FOODS, STORAGE, TASTE, CARBOHYDRATES (U)

NUTRITIONAL SUPPLEMENTS WERE DEVELOPED FOR CONSUMPTION WITH PRESENTLY AVAILABLE SHELTER RATIONS. WHEN CONSUMED AS DIRECTED, THESE SUPPLEMENTS WILL SUPPLY ALL THE NUTRITIONAL FACTORS RECOGNIZED BY THE NATIONAL RESEARCH COUNCIL AS ESSENTIAL FOR THE MAINTENANCE OF ADULTS. THEY WILL EXTEND THE USE OF SHELTER RATIONS TO SHELTER OCCUPANTS WHO REQUIRE SPECIAL FEEDING, AND TO THE GENERAL POPULATION, DURING THE POST-ATTACK PERIOD. THE SUPPLEMENTS ARE OF TWO TYPES: UNFLAVORED COMPRESSED TABLETS; AND DEHYDRATED SPREADS, FLAVORED SO THAT THEY WILL ENHANCE THE PALATABILITY OF RATION BISCUIT, CRACKER, AND WAFER. ACCELERATED STORAGE TESTS INDICATE THAT (A) THE TABLETS HAVE A HIGH EXPECTED SHELF LIFE, AND (B) THE FLAVOR OF THE SPREADS SHOULD BE FURTHER STABILIZED. NEW MINT-TYPE AND TABLETED GRANULAR STARCH CARBOHYDRATE SUPPLEMENTS WERE DEVELOPED, WHICH ARE SOFT-TEXTURED AND FULLY COMPATIBLE WITH THE MUCOUS MEMBRANES OF THE ORAL CAVITY. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-632 963 13/1 13/13 15/3
GENERAL AMERICAN RESEARCH DIV GENERAL AMERICAN TRANSPORTATION CORP NILES ILL
PREPRODUCTION PROTOTYPE PACKAGE VENTILATION KIT, SECOND STRUCTURAL AND HUMAN FACTORS TEST. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
AUG 65 95P LIBOVICZ,BASIL A. ;
NEVERIL,ROBERT R. ;BEHLS,HERMAN F. ;
REPT. NO. GARD-1278-4.2,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SUBCONTRACTED TO STANFORD RESEARCH INST., CALIF., CONTRACT B-70925(4949A-28)-US.

DESCRIPTORS: (*FALLOUT SHELTERS, *VENTILATION), PORTABLE, CIVIL DEFENSE SYSTEMS, COOLING *VENTILATING EQUIPMENT, TESTS, HUMAN ENGINEERING, PERFORMANCE(ENGINEERING), SPECIFICATIONS (U)

A PORTABLE VENTILATION SYSTEM, DESIGNED FOR FALLOUT SHELTERS, WAS MANUALLY OPERATED CONTINUOUSLY FOR TWO WEEKS. THE PACKAGE VENTILATION KIT (PVK) EVALUATED INCLUDED A FAN ASSEMBLY PLUS TWO DRIVE MODULES. A PREVIOUS TEST HAD DISCLOSED SOME MECHANICAL WEAKNESSES THAT WERE SUBSEQUENTLY CHANGED. THE MODIFIED PVK FUNCTIONED WITHOUT ANY FAILURES; THEREFORE, SPECIFICATION MIL-V-40646, 'PACKAGE VENTILATION KIT, 20-INCH FAN, MODULAR DRIVE (CIVIL DEFENSE)', WAS ISSUED 16 AUGUST 1965. MINOR IMPROVEMENTS TO THIS SPECIFICATION ARE RECOMMENDED. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-632 964 13/1 13/13 13/11 11/9
GENERAL AMERICAN RESEARCH DIV GENERAL AMERICAN TRANSPORTATION CORP NILES ILL
FRICTION LOSS IN FLEXIBLE PLASTIC AIR DUCT. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
OCT 65 72P NEVERIL,ROBERT B. ;
BEHLS,HERMAN F. ;
REPT. NO. GARD-1278-2,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SUBCONTRACTED TO STANFORD RESEARCH INST., CALIF., CONTRACT B-70925(4949A-28)-U.S.

DESCRIPTORS: (*FALLOUT SHELTERS, VENTILATION), (*VENTILATION DUCTS, POLYETHYLENE PLASTICS), (*PIPES, FRICTION), CIVIL DEFENSE SYSTEMS, PRESSURE, FLEXIBLE STRUCTURES, SKIN FRICTION, REDUCTION, GAS FLOW, COOLING * VENTILATING EQUIPMENT (U)

TESTS WERE CONDUCTED TO DETERMINE THE PRESSURE DROP CHARACTERISTICS OF 20-INCH DIAMETER, 4-MIL THICK, POLYETHYLENE TUBING AND BOTH FACTORY AND SHELTER FABRICATED 90-DEGREE ELBOWS. THE TESTS WERE PERFORMED AT FLOW RATES RANGING FROM 1300 TO 4100 CUBIC FEET PER MINUTE. THESE PLASTIC COMPONENTS ARE PART OF A PORTABLE VENTILATION SYSTEM THAT WAS DEVELOPED FOR CIVIL DEFENSE FALLOUT SHELTERS, SPECIFICATION MIL-V-40645. FULLY INFLATED 20-INCH DIAMETER PLASTIC TUBING HAS ABOUT THREE-QUARTERS OF THE PRESSURE DROP OF SHEET-METAL DUCT. HOWEVER, THE LAST FIFTY FEET OF A PLASTIC DUCT SYSTEM, WHICH IS NOT COMPLETELY INFLATED, HAS 1-1/2 TO 3 TIMES THE PRESSURE DROP PER FOOT OF FULLY INFLATED PLASTIC TUBING. THE RESULT IS THAT FOR DUCT SYSTEMS OVER 100 FEET LONG THE PRESSURE DROPS FOR SHEET-METAL AND PLASTIC TUBING ARE APPROXIMATELY THE SAME. THE FRICTION LOSSES FOR BOTH FACTORY FABRICATED AND SHELTER FABRICATED ELBOWS WERE ESTABLISHED. A 40-INCH, SMOOTH RADIUS, 90-DEGREE FACTORY FABRICATED ELBOW IS RECOMMENDED FOR USE WITH THE CIVIL DEFENSE PACKAGE VENTILATION KIT. THIS ELBOW DEVELOPS A PRESSURE DROP EQUIVALENT TO 60 FEET OF STRAIGHT TUBING. THE BEST SHELTER FABRICATED ELBOW IS A THREE-PIECE ELBOW WITH A RADIUS OF 60 INCHES THAT CAN BE FABRICATED FROM THE STRAIGHT TUBING AND TAPE STOCKED IN THE PACKAGE VENTILATION KIT. THIS ELBOW DEVELOPS A PRESSURE DROP EQUIVALENT TO 90 FEET OF STRAIGHT TUBING. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-635 501 15/3 5/9 5/10 13/13
GEORGIA U ATHENS
SHELTER OCCUPANCY STUDIES AT THE UNIVERSITY OF GEORGIA. (U)
DESCRIPTIVE NOTE: FINAL REPT.
DEC 65 244P HAMMES, JOHN A. ;
TASK: 1520.

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*FALLOUT SHELTERS, *ADJUSTMENT(PSYCHOLOGY)), (*CIVIL DEFENSE SYSTEMS, *PERSONNEL MANAGEMENT), TRAINING, CONFINED ENVIRONMENTS, CIVIL DEFENSE PERSONNEL (U)

FROM 1962 THROUGH 1965 THE UNIVERSITY OF GEORGIA CIVIL DEFENSE RESEARCH STAFF CONDUCTED EIGHT SIMULATED COMMUNITY FALLOUT SHELTER OCCUPANCY TESTS FOR THE OFFICE OF CIVIL DEFENSE. INVESTIGATED VARIABLES INCLUDED ORGANIZATIONAL AND ENVIRONMENTAL FACTORS. PARTICIPANTS WERE MEN, WOMEN, AND CHILDREN, AGED 1-70 YEARS. THE LAST TWO 300-PERSON TESTS, CONDUCTED IN 1965, FORM THE BASIS FOR THE REPORT. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-635 502 15/3 5/9 5/10 13/13
GEORGIA UNIV ATHENS
SHELTER OCCUPANCY STUDIES AT THE UNIVERSITY OF GEORGIA (APPENDICES). (U)
DEC 65 198P

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-635 501.

DESCRIPTORS: (*FALLOUT SHELTERS, *ADJUSTMENT(PSYCHOLOGY)), (*CIVIL DEFENSE SYSTEMS, *PERSONNEL MANAGEMENT), CONFINED ENVIRONMENTS, MEDICAL EXAMINATIONS, TABLES, PSYCHOMETRICS (U)

CONTENTS: PRE-SHELTER QUESTIONNAIRE DATA; MEDICAL RECORD DATA; STRUCTURED AND UNSTRUCTURED DIARY DATA; ENVIRONMENTAL DATA; SHELTEREE PERSONAL POSSESSIONS DATA; EMERGENCY OPERATING CENTER PROGRAM. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BNL27

AD-637 768 15/3 5/1
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
EMERGENCY OPERATIONS RESEARCH. (U)
DESCRIPTIVE NOTE: SUMMARY REPT.
MAY 66 14P CUASACK,B. L. ;FLINT,RHEA &
GIBBONS,R. D. ;HANEY,T. P. ;JARRETT,H. F. ;
REPT. NO. TM(L)-2938/000/00,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (•CIVIL DEFENSE SYSTEMS, MANAGEMENT PLANNING), FALLOUT SHELTERS, REVIEWS, DISASTERS, DATA PROCESSING SYSTEMS, FIRE SAFETY, DECISION MAKING (U)

THREE FINAL REPORT VOLUMES WERE ISSUED, WHICH DOCUMENT IN DETAIL THE CONTRACT WORK ACTIVITIES. THE CONTENTS OF EACH OF THESE THREE ARE BRIEFLY SUMMARIZED IN THIS VOLUME. THE DOCUMENTS ARE: TECHNICAL MEMORANDUM 2938/001 (AD-637 766) - FINAL REPORT ON EMERGENCY OPERATIONS SIMULATION RESEARCH - THIS REPORT DOCUMENTS THOSE ASPECTS OF THE RESEARCH THAT WERE PRIMARILY LABORATORY ORIENTED. TECHNICAL MEMORANDUM 2938/002 (AD-637 767) - DATA PROCESSING FOR LOCAL CIVIL DEFENSE: AN INVESTIGATION OF THE POTENTIALS - THIS REPORT PRESENTS TO OCD THE NECESSARY CONSIDERATIONS THAT MUST BE MET BEFORE A LOCAL DIRECTOR DECIDES TO UTILIZE DATA-PROCESSING EQUIPMENT FOR LOCAL CIVIL DEFENSE. TECHNICAL MEMORANDUM 2938/003 (AD-637 765) - FIRE DATA FROM THE WATTS RIOT: RESULTS OF PRELIMINARY ANALYSIS AND EVALUATION - THIS REPORT DOCUMENTS THE RESULTS OF A PRELIMINARY ANALYSIS AND EVALUATION OF DATA FROM THE WATTS RIOT PROVIDED BY THE U. S. DEPARTMENT OF AGRICULTURE, U. S. FOREST SERVICE. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-637 806 15/3 13/12
IIT RESEARCH INST CHICAGO ILL TECHNOLOGY CENTER
SHELTER HABITABILITY IN EXISTING BUILDINGS UNDER FIRE EXPOSURE. (U)
DESCRIPTIVE NOTE: FINAL SUMMARY RESEARCH REPT., MAY 65-JAN 66.
JUN 66 149P WATERMAN, THOMAS E. ;
REPT. NO. M6121,
CONTRACT: N228(62479)-68355,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*FALLOUT SHELTERS, *FIRE SAFETY), CIVIL DEFENSE SYSTEMS, BUILDINGS, WOOD, CERAMIC MATERIALS, FIRES, COMBUSTION PRODUCTS, FLUID MECHANICS (U)

EXPERIMENTS WERE PERFORMED IN FULL SCALE BUILDINGS TO OBTAIN INFORMATION REGARDING THE HABITABILITY OF FALLOUT SHELTERS IN EXISTING BUILDINGS UNDER FIRE EXPOSURE. ONE TWO-STORY AND TWO THREE-STORY BUILDINGS OF MASONRY AND WOOD JOIST CONSTRUCTION WERE USED. THE FIRE LOAD OF THE ROOM OF FIRE ORIGIN CONSISTED OF A LARGE CRIB (2X4 INCH LUMBER) WITH THE REMAINDER OF THE STRUCTURES LOADED WITH FURNITURE TYPICAL OF RESIDENTIAL CONSTRUCTION. RESULTS INDICATE THAT OXYGEN DEPLETION IN AN ACTIVE FIRE ZONE WILL BE REPRODUCED THROUGHOUT INTERCONNECTING SPACES. CARBON MONOXIDE CONCENTRATIONS OF 75 PERCENT OF THOSE IN THE ACTIVE FIRE ZONE WERE FOUND AT PLACES REMOVED FROM THE FIRE BUT ON THE SAME OR HIGHER LEVELS. FOR THESE BUILDINGS, WIND-INDUCED PRESSURE DIFFERENCES WERE GREATER THAN FIRE-INDUCED PRESSURE DIFFERENCES AND THUS WOULD HAVE HAD GREATER EFFECT ON THE INFILTRATION OF FIRE GASES THROUGH SHELTER BARRIERS. THE LONG LASTING EFFECTS DEBRIS FIRES IN CONTACT WITH THE SHELTER WERE FOUND TO PRODUCE DANGEROUS HEATING OF THE SHELTER. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-640 823 6/8
GEORGIA EXPERIMENT STATION EXPERIMENT
STORAGE STABILITY OF CIVIL DEFENSE SHELTER
RATIONS. (U)
DESCRIPTIVE NOTE: ANNUAL REPT. NO. 4, 21 JUN 65-30 JUN
66.
OCT 66 77P WOODROOF,J. G. ICECIL,S. R. &
CONTRACT: DA-19-129-QM-2050(N),OCD-OS-62-156
MONITOR: USA-NLABS TR-67-25-CD

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*FOOD, STORAGE), STABILITY,
CIVIL DEFENSE SYSTEMS, PRESERVATION, FIBERBOARD,
CONTAINERS, PHYSICAL PROPERTIES, TASTE,
FALLOUT SHELTERS (U)

PROGRESS IS REPORTED ON STORAGE OF (1) 4 LOTS OF SURVIVAL CRACKERS, 4 LOTS OF SURVIVAL BISCUITS, AND 4 LOTS OF BULGUR WAFERS FOR 36 MONTHS, AND (2) 3 LOTS OF CARBOHYDRATE SUPPLEMENT FOR 18 AND 24 MONTHS, AT 100F/80% R.H., 100/57%, 70/80%, 70/57%, 40/57%, AND OF. TWO SPECIAL CASES OF BISCUITS FROM APPROXIMATELY 42 MONTHS STORAGE IN A GSA COMMON STORAGE WAREHOUSE ARE ALSO REPORTED ON. DATA INCLUDE (A) BURSTING STRENGTH, MOISTURE, AND GENERAL CONDITION OF V3C FIBERBOARD CASES, (B) CORROSION, COATING DEFECTS, AND LEAKAGE OF 2 1/2-GAL. AND 5-GAL. METAL CANS, (C) GENERAL PACKAGE AND PRODUCT CONDITION, (D) RESIDUAL OXYGEN, FRACTURE STRENGTH, MOISTURE, PEROXIDES, AND FREE FATTY ACIDS OF THE WHEAT PRODUCTS, (E) MOISTURE, PH, AND SUGARS OF THE SUPPLEMENTS, AND (F) COLOR, SENSORY QUALITY AND HEDONIC RATINGS FOR ALL PRODUCTS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-641 645 15/3 13/13 5/11
IOWA AGRICULTURAL AND HOME ECONOMICS EXPERIMENT STATION
AMES DEPT OF SOCIOLOGY AND ANTHROPOLOGY
ADOPTION OF PUBLIC FALLOUT SHELTERS. A 1964 NATIONAL STUDY. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
66 349P KLONGLAN,GERALD E. ;
BEAL,GEORGE M. ;BOHLEN,JOE M. ;
REPT. NO. RURAL SOCIOLOGY-49
TASK: 4811-E

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-641 646.

DESCRIPTORS: (*FALLOUT SHELTERS, PUBLIC OPINION), CIVIL DEFENSE SYSTEMS, ATTITUDES, PERCEPTION, ANALYSIS, NUCLEAR WARFARE (U)

A MODEL OF THE ADOPTION PROCESS IS USED TO ANALYZE THE PUBLIC'S PROGRESS IN ADOPTING THE IDEA OF USING PUBLIC FALLOUT SHELTERS IN THE EVENT OF NUCLEAR ATTACK. THE ANALYSIS IS BASED ON FINDINGS FROM THE 1964 OCD NATIONAL SURVEY OF 1464 RESPONDENTS. RESPONDENTS ARE ASSIGNED TO ONE OF FIVE ADOPTION STAGES: 44.7% OF THE RESPONDENTS WERE UNAWARE OF THE EXISTENCE OF PUBLIC FALLOUT SHELTERS (UNAWARE STAGE); 10.2% WERE AWARE OF PUBLIC FALLOUT SHELTERS BUT HAD NO ADDITIONAL INFORMATION ABOUT THEM (AWARE STAGE); 16.6% WERE AWARE OF AND HAD ADDITIONAL INFORMATION ABOUT PUBLIC FALLOUT SHELTERS BUT HAD NOT THOUGHT ABOUT USING THEM (INFORMATION STAGE); 10.2% WERE AWARE OF, HAD ADDITIONAL INFORMATION, AND HAD THOUGHT ABOUT USING PUBLIC FALLOUT SHELTERS BUT HAD NOT DECIDED TO GO TO A PUBLIC FALLOUT SHELTER (EVALUATION STAGE); 18.2% WERE AWARE OF, HAD ADDITIONAL INFORMATION, HAD THOUGHT ABOUT USING AND HAD DECIDED TO GO TO A PUBLIC FALLOUT SHELTER IN THE EVENT OF NUCLEAR ATTACK (ADOPTION STAGE). THE RELATIONSHIPS BETWEEN SELECTED DEMOGRAPHIC AND ATTITUDE VARIABLES AND STAGE OF ADOPTION OF PUBLIC FALLOUT SHELTERS ARE ANALYZED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-641 646 15/3 13/13 5/11
IOWA AGRICULTURAL AND HOME ECONOMICS EXPERIMENT STATION
AMES DEPT OF SOCIOLOGY AND ANTHROPOLOGY
ADOPTION OF PUBLIC FALLOUT SHELTERS, A 1964 NATIONAL STUDY. (U)
DESCRIPTIVE NOTE: SUMMARY OF THE FINAL REPT.,
66 34P KLONGLAN,GERALD E. ;
BEAL,GEORGE M. ;BOHLEN,JOE M. ;
REPT. NO. RURAL SOCIOLOGY-49S
TASK: 4811-E

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-641 645.

DESCRIPTORS: (*FALLOUT SHELTERS, PUBLIC OPINION), CIVIL DEFENSE SYSTEMS, ATTITUDES, PERCEPTION, ANALYSIS, NUCLEAR WARFARE (U)

A MODEL OF THE ADOPTION PROCESS IS USED TO ANALYZE THE PUBLIC'S PROGRESS IN ADOPTING THE IDEA OF USING PUBLIC FALLOUT SHELTERS IN THE EVENT OF NUCLEAR ATTACK. THE ANALYSIS IS BASED ON FINDINGS FROM THE 1964 OCD NATIONAL SURVEY OF 1464 RESPONDENTS. RESPONDENTS ARE ASSIGNED TO ONE OF FIVE ADOPTION STAGES: 44.7% OF THE RESPONDENTS WERE UNAWARE OF THE EXISTENCE OF PUBLIC FALLOUT SHELTERS (UNAWARE STAGE); 10.2% WERE AWARE OF PUBLIC FALLOUT SHELTERS BUT HAD NO ADDITIONAL INFORMATION ABOUT THEM (AWARE STAGE); 16.6% WERE AWARE OF AND HAD ADDITIONAL INFORMATION ABOUT PUBLIC FALLOUT SHELTERS BUT HAD NOT THOUGHT ABOUT USING THEM (INFORMATION STAGE); 10.2% WERE AWARE OF, HAD ADDITIONAL INFORMATION, AND HAD THOUGHT ABOUT USING PUBLIC FALLOUT SHELTERS BUT HAD NOT DECIDED TO GO TO A PUBLIC FALLOUT SHELTER (EVALUATION STAGE); 18.2% WERE AWARE OF, HAD ADDITIONAL INFORMATION, HAD THOUGHT ABOUT USING AND HAD DECIDED TO GO TO A PUBLIC FALLOUT SHELTER IN THE EVENT OF NUCLEAR ATTACK (ADOPTION STAGE). THE RELATIONSHIPS BETWEEN SELECTED DEMOGRAPHIC AND ATTITUDE VARIABLES AND STAGE OF ADOPTION OF PUBLIC FALLOUT SHELTERS ARE ANALYZED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-641 701 13/13 13/1
GENERAL AMERICAN RESEARCH DIV GENERAL AMERICAN TRANSPORTATION CORP NILES ILL
NATURAL VENTILATION TEST OF AN ABOVEGROUND FALLOUT SHELTER IN CHICAGO, ILLINOIS, (U)
AUG 66 82P HENNINGER,ROBERT H. ;
MADSON,CHARLES A. ;
REPT. NO. GARD-1268-81

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: NOT REPRODUCIBLE BY CFSTI STANDARDS.

DESCRIPTORS: (*FALLOUT SHELTERS, VENTILATION), TESTS, WIND, TEMPERATURE, HUMIDITY, ILLINOIS, CIVIL DEFENSE SYSTEMS (U)

THE RESULTS ARE REPORTED ON A NATURAL VENTILATION TEST OF A CORRIDOR-TYPE SHELTER LOCATED IN CHICAGO. THE EFFECTIVE TEMPERATURE OF THIS SHELTER WHEN OCCUPIED AT A DENSITY OF 10 SQUARE FEET PER PERSON WILL NOT EXCEED 83F FOR MORE THAN SEVEN DAYS DURING AN AVERAGE YEAR. THIS INTERIM REPORT DESCRIBES ENVIRONMENTAL TESTS PERFORMED IN A SPECIFIC SHELTER. THE DISCUSSION OF THE RESULTS IS PRELIMINARY AND SHOULD NOT BE USED AS THE BASIS FOR GENERAL CONCLUSIONS. A SUBSEQUENT FINAL REPORT WILL INCLUDE A COMPARATIVE EVALUATION OF DATA FROM SUBSEQUENT TESTS HAVING A VARIETY OF CONFIGURATIONS AND LOCATIONS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-642 241 13/12 11/7 13/13 15/3
IIT RESEARCH INST CHICAGO ILL TECHNOLOGY CENTER
DEVELOPMENT OF FIRE RESISTANCE RATINGS FOR SHELTER COMPONENTS. (U)
DESCRIPTIVE NOTE: FINAL REPT. MAY 65-FEB 66,
MAR 66 70P WATERMAN,T. E. ISALZBERG,F. B
REPT. NO. M6125
CONTRACT: N228(62479)A8580
MONITOR: USNRDL TRC-39

UNCLASSIFIED REPORT

DESCRIPTORS: (*FIRE RESISTANT MATERIALS, *FALLOUT SHELTERS), FIRE SAFETY, CIVIL DEFENSE SYSTEMS, BRICK, CALCIUM COMPOUNDS, SULFATES, HYDRATES, WOOD, FLAMMABILITY, FIBERBOARD, TEMPERATURE, PRESSURE, MEASUREMENT, THERMAL RADIATION (U)

EXPERIMENTS WERE PERFORMED TO EVALUATE THE RESPONSES OF SHELTER COMPONENTS TO TYPICAL FIRE EXPOSURES IN ORDER TO DEVELOP MEANS FOR PREDICTING THESE RESPONSES FROM THE RESULTS OF A MINIMUM NUMBER OF STANDARDIZED TESTS. EXPOSURES WERE PROVIDED BY AN INFRARED LAMPBANK. SAMPLES INCLUDED MATERIAL OF BOTH HIGH AND LOW INSULATING QUALITIES, INERT MATERIALS, AND THOSE EXHIBITING ABLATIVE AND DEHYDRATION PROCESSES. EACH SAMPLE WAS APPROXIMATELY 16-IN. WIDE, 24-IN. HIGH AND 2-IN. THICK. RESULTS INDICATE THAT FIRE RESISTANCE OF A BARRIER IS CONSIDERABLY AFFECTED BY THE INTENSITY OF EXPOSURE. FOR HOMOGENEOUS COMBUSTIBLE MATERIALS, THIS EFFECT CAN BE EXPRESSED APPROXIMATELY IN TERMS OF THE AREA EQUIVALENCE METHOD SUGGESTED BY INGBERG. FOR HOMOGENEOUS NON-COMBUSTIBLE MATERIALS, CONTAINING FREE WATER, THIS METHOD PRODUCED ERRORS RANGING FROM 10 TO 31 PERCENT. THIS ERROR IS SUBSTANTIALLY LARGER FOR MATERIALS CONTAINING BOTH FREE AND CHEMICALLY-COMBINED WATER. IN THE CASE OF NON-HOMOGENEOUS MATERIALS, THE ERROR RANGED FROM 62 TO 86 PERCENT. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-642 296 5/10 15/3
HRB-SINGER INC STATE COLLEGE PA
THE PSYCHOLOGICAL ENVIRONMENT OF PROTECTIVE SHELTERS. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
JUL 66 146P WRIGHT,G. H. ;FENSTERMACHER,N. H. ;
REPT. NO. HRB-75111-2F
PROJ: OCD-1500
TASK: 1510

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-642 315.

DESCRIPTORS: (*CONFINEMENT(PSYCHOLOGY), *FALLOUT SHELTERS), (*CONFINED ENVIRONMENTS, FALLOUT SHELTERS), STRESS(PSYCHOLOGY), SOCIAL PSYCHOLOGY, REACTION(PSYCHOLOGY), BEHAVIOR, ADJUSTMENT(PSYCHOLOGY), CIVIL DEFENSE SYSTEMS, STATISTICAL ANALYSIS, FEAR, PSYCHOMETRICS, PERCEPTION(PSYCHOLOGY), LEADERSHIP (U)

THE STUDY WAS DESIGNED TO CROSS-VALIDATE MEASURING INSTRUMENTS, TO PROVIDE A REFINEMENT OF METHODOLOGY FOR USE IN FUTURE SHELTER STUDIES, TO INVESTIGATE THE EFFECTS OF SPECIFIED SHELTER RELEVANT STRESSES, AND TO APPROXIMATE A STANDARD FOR EVALUATION OF INDICES OF PSYCHO-SOCIAL STRESSES OCCURRING IN SHELTER CONFINEMENT. THESE PURPOSES WERE ACCOMPLISHED BY COMPARING THE REACTIONS OF TWO EQUIVALENT GROUPS, ONE SUBJECTED TO SELECTED STRESSES AND THE OTHER NOT, ON SPECIFICALLY DESIGNED RATING FORMS, TESTS, AND EXPERIMENTAL TASKS. ALL OTHER CONDITIONS OF CONFINEMENT WERE EQUIVALENT FOR THE TWO GROUPS. THE VALIDATION PROCEDURE CONSISTED OF COMPARISONS BETWEEN THE ORIGINAL GROUP FROM THE PSYCHIATRIC HOSPITALS AND BOTH GROUPS FROM THE SHELTER CONFINEMENTS. ADDITIONAL INFORMATION WAS OBTAINED THROUGH THE USE OF TWO GROUPS IN THE VALIDATION PORTION OF THE STUDY. THE RESULTS OF THE STUDY INDICATED THAT A SHELTER GROUP WHO RECEIVED SUPPLEMENTARY PSYCHOLOGICAL SUPPORTS EVIDENCED A GREATER ACCEPTANCE OF CONFINEMENT THAN THE GROUP FOR WHOM NONE WERE PROVIDED. THE EXPERIMENTAL DATA VALIDATED PREVIOUS FINDINGS AND SHOWED THAT CERTAIN BEHAVIORS APPEAR TO BE IMPORTANT IN THE PSYCHOLOGICAL ENVIRONMENTS THAT EXIST AT THE BEGINNING OF AND FOLLOWING A PERIOD OF CONFINEMENT. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-644 505 5/1 ° 13/13
AMERICAN INSTITUTES FOR RESEARCH PITTSBURGH PA INST FOR PERFORMANCE TECHNOLOGY
AN EXPERIMENTAL STUDY OF *INTEGRATED GUIDANCE FOR SHELTER MANAGEMENT*. (U)
DESCRIPTIVE NOTE: FINAL SUMMARY REPT.,
SEP 66 13P SMITH,ROBERT W. !BEND,EMIL
!JEFFREYS,FRANK B. !COLLINS,ROBERT A. !

UNCLASSIFIED REPORT

DESCRIPTORS: (*FALLOUT SHELTERS, *MANAGEMENT ENGINEERING), TEXTBOOKS, INSTRUCTION MANUALS, EFFECTIVENESS, MANAGEMENT PLANNING, TRAINING, CIVIL DEFENSE SYSTEMS, CIVIL DEFENSE PERSONNEL (U)

IN 1965, THE AMERICAN INSTITUTES FOR RESEARCH PRODUCED A SET OF DOCUMENTS DESIGNED TO AID PERSONS WITH SHELTER MANAGEMENT RESPONSIBILITIES IN CARRYING OUT BOTH THEIR PEACETIME AND EMERGENCY DUTIES. THE FIRST VOLUME IN THE SET IS A TRAINING TEXT WHICH SERVES AS AN INTRODUCTION TO THE SUBJECT OF SHELTER MANAGEMENT. THE SECOND VOLUME IS A GUIDANCE DOCUMENT FOR PLANNING A GROUP FALLOUT SHELTER. THE FINAL DOCUMENT IS FOR IN-SHELTER USE, TO ASSIST THE MANAGEMENT STAFF IN ORGANIZING AND OPERATING A SHELTER UNDER OCCUPANCY CONDITIONS. TOGETHER, THE THREE DOCUMENTS MAKE UP AN INTEGRATED GUIDANCE PACKAGE WHICH COVERS THE BROAD RANGE OF INFORMATION AND ACTION REQUIREMENTS FOR SHELTER PLANNING AND MANAGEMENT. THE OBJECTIVE OF THE RESEARCH PROGRAM DESCRIBED IN THIS REPORT WAS TO OBTAIN EMPIRICAL DATA ON THE INDIVIDUAL EFFECTIVENESS OF THESE GUIDANCE DOCUMENTS AND TO ASSESS THE EFFECTIVENESS OF VARIOUS COMBINATIONS OF THESE MATERIALS IN ENHANCING THE PEACETIME AND EMERGENCY SHELTER MANAGEMENT FUNCTIONS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-644 875 5/1 15/3 13/13
AMERICAN INSTITUTES FOR RESEARCH PITTSBURGH PA INST FOR PERFORMANCE TECHNOLOGY
STUDIES OF IN-SHELTER MANAGEMENT GUIDANCE MATERIALS. (U)
DESCRIPTIVE NOTE: TECHNICAL REPT.,
SEP 66 48P BEND,EMIL ;UNTERWAGNER,JAMES ;MCINTYRE,FRANK F. ;
REPT. NO. AIR-D-93C1-9/66-FR

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-644 878.

DESCRIPTORS: (*FALLOUT SHELTERS, *MANAGEMENT ENGINEERING), CIVIL DEFENSE SYSTEMS, MATERIALS, HANDBOOKS, TRAINING DEVICES, CIVIL DEFENSE PERSONNEL (U)

THE REPORT DESCRIBES TWO SMALL SCALE RESEARCH EFFORTS DEALING WITH THE SUBJECT OF MANAGEMENT GUIDANCE MATERIALS FOR USE IN-SHELTER. THE FIRST EFFORT CULMINATED IN A PROTOTYPE ABBREVIATED GUIDANCE AID DESIGNED FOR THE SMALL (UNDER 50 PERSON) SHELTER. THIS VERSION TRIED TO AVOID SOME OF THE SHORTCOMINGS OF PREVIOUS MANAGEMENT GUIDANCE DOCUMENTS, SUCH AS LARGE SIZE OR INFLEXIBILITY OF USE. THE SECOND SECTION OF THIS REPORT IS BASED ON A REVIEW OF THE RELATIVELY MEAGER LITERATURE ON THE PREPARATION OF WRITTEN MATERIALS FOR EMERGENCY USE. IT DISCUSSES THE MAJOR *GRAPHIC ART* FACTORS THAT SHOULD BE CONSIDERED IN DEVELOPING EMERGENCY GUIDANCE MATERIALS AND PROVIDES RECOMMENDATIONS FOR GUIDANCE PREPARATION WHERE APPROPRIATE. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-644 878 5/1 15/3 13/13
AMERICAN INSTITUTES FOR RESEARCH PITTSBURGH PA INST FOR PERFORMANCE TECHNOLOGY
AN EAPERIMENTAL STUDY OF AINTEGRATED GUIDANCE FOR SHELTER MANAGEMENT*. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
SEP 66 182P SMITH,ROBERT W. ;BEND,EMIL ;JEFFREYS,FRANK B. ;COLLINS,ROBERT A. ;
REPT. NO. AIR-D93B(142)-9/66-FR

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-644 875.

DESCRIPTORS: (*FALLOUT SHELTERS, MANAGEMENT ENGINEERING), CIVIL DEFENSE SYSTEMS, MANAGEMENT PLANNING, CIVIL DEFENSE PERSONNEL, TRAINING DEVICES, HANDBOOKS, EXPERIMENTAL DESIGN (U)

A THREE-VOLUME PACKAGE OF INTEGRATED SHELTER MANAGEMENT MATERIAL WAS RECENTLY PRODUCED FOR APPLICATION TO SHELTER MANAGEMENT TRAINING, SHELTER PLANNING, AND IN-SHELTER MANAGEMENT. THIS REPORT DEALS WITH AN EXPERIMENT TO OBTAIN EMPIRICAL DATA ON THE INDIVIDUAL EFFECTIVENESS OF THESE DOCUMENTS AS WELL AS THE IMPACT OF VARIOUS COMBINATIONS OF THESE MATERIALS ON SHELTER PLANNING AND SHELTER MANAGEMENT. THE DEPENDENT VARIABLES INVOLVED IN THE EXPERIMENT WERE PERFORMANCE ON A SHELTER PLANNING TEST AND A SHELTER MANAGEMENT TEST. THE INDEPENDENT VARIABLES INCLUDED SHELTER MANAGEMENT TRAINING, USE OF A SHELTER OCCUPANCY EXERCISE, SHELTER PLANNING ORIENTATION AND PLANNING EXPERIENCE, THE PRESENCE OR ABSENCE OF SHELTER MANAGEMENT GUIDANCE, THE NATURE OF THE SHELTER SITUATION, AND THE BACKGROUND (STUDENT VS. EXECUTIVE) OF THE SUBJECTS. THE RELATIONSHIP OF MENTAL ABILITY TO BOTH OF THE DEPENDENT VARIABLES ALSO WAS MEASURED AND CONTROLLED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-645 285 15/3 5/9
AMERICAN INSTITUTES FOR RESEARCH PITTSBURGH PA INST FOR PERFORMANCE TECHNOLOGY
AN EVALUATION OF THE ROLE OF FEDERAL PERSONNEL IN RECRUITING SHELTER MANAGERS. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
SEP 66 59P JEFFREYS,JRANK B. ;
SMITH,ROBERT W. ;
REPT. NO. AIR-D93B(1)-9/66-FR

UNCLASSIFIED REPORT

DESCRIPTORS: (*SHELTERS, MANAGEMENT ENGINEERING), (*GOVERNMENT EMPLOYEES, RECRUITING), CIVIL DEFENSE SYSTEMS, SELECTION, PERFORMANCE(HUMAN), URBAN AREAS, COSTS, CIVIL DEFENSE PERSONNEL, TRAINING (U)

THE PURPOSE OF THE PRESENT STUDY HAS BEEN TO EVALUATE FEDERAL PERSONNEL AS SHELTER MANAGER RECRUITERS AND TO ANALYZE THE EXPERIENCES OF THESE RECRUITERS IN VARIOUS METROPOLITAN AREAS. THE SAMPLE CONSISTED OF FOUR CITIES FROM THREE OF THE EIGHT OCD REGIONS. CITY 1 AND CITY 2 CONDUCTED PROGRAMS SPECIFICALLY FOR THE STUDY. ADDITIONAL DATA WERE GATHERED FROM AN ON-GOING RECRUITMENT PROGRAM IN CITY 3 AND FROM THE EFFORTS OF AN OFFICE BUILDING COMPLEX IN CITY 4. CITY 1 AND CITY 2 USED PERSONAL CONTACT WITH TEAMS CONSISTING OF BOTH FEDERAL AND LOCAL PERSONNEL. CITY 3 USED PERSONAL CONTACT BY LOCAL PERSONNEL ONLY, AND THE OFFICE BUILDING COMPLEX IN CITY 4 RECRUITED THROUGH A GROUP MEETING AND LETTER CAMPAIGN. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-645 286 15/3 5/9
AMERICAN INSTITUTES FOR RESEARCH PITTSBURGH PA INST FOR PERFORMANCE TECHNOLOGY
SOME TRAINING IMPLICATIONS OF LARGE SHELTERS. (U)
DESCRIPTIVE NOTE: TECHNICAL REPT.,
SEP 66 43P BEND,EMIL ;
REPT. NO. AIR-D-9381-9/66-FR

UNCLASSIFIED REPORT

DESCRIPTORS: (*SHELTERS, MANAGEMENT ENGINEERING), (*SUPERVISORY PERSONNEL, TRAINING), CIVIL DEFENSE SYSTEMS, MANAGEMENT PLANNING, LEADERSHIP, SIMULATION, MANAGEMENT CONTROL SYSTEMS, DECISION MAKING, PERFORMANCE(HUMAN) (U)

BASED LARGELY UPON CONCURRENT AIR RESEARCH IN THE AREA OF SHELTER MANAGEMENT SIMULATION, AN ANALYSIS OF THE IMPACT OF THE LARGE, COMPLEX SHELTER ON SHELTER MANAGEMENT TRAINING NEEDS WAS CONDUCTED. THE LARGE SHELTER IS SEEN AS REQUIRING THE TYPE OF OVERALL LEADERSHIP THAT ONLY PERSONS WITH PRE-EXISTING SUPERVISORY SKILLS CAN SUPPLY. SUCH PEOPLE ARE, BY AND LARGE, NEITHER ATTRACTED NOR HELPED BY THE STANDARD SHELTER MANAGEMENT TRAINING COURSE. THE OBJECTIVES OF EXECUTIVE SHELTER MANAGEMENT TRAINING SHOULD BE (1) TO REVEAL TO THE STUDENT THE COMPLEXITY OF THE LARGE SHELTER AND THE TYPES OF PROBLEMS THAT CAN THREATEN ITS INTEGRITY, AND (2) TO IDENTIFY AND DRAMATIZE THE DIFFERENCES BETWEEN PEACETIME AND EMERGENCY MANAGEMENT. TO ACHIEVE THESE OBJECTIVES IT IS RECOMMENDED THAT TRAINING FOR EXECUTIVE SHELTER MANAGERS INCORPORATE (1) A PLANNING SESSION IN WHICH TRAINEES PARTICIPATE IN DEVELOPING A SHELTER PLAN FOR A LARGE, COMPLEX PUBLIC SHELTER, AND (2) A LARGE SHELTER SIMULATION GAME PLAYED DURING THE OCCUPANCY EXERCISE IN WHICH THE STUDENTS ASSUME THE ROLES OF AN EXECUTIVE CADRE OF A LARGE SHELTER. (U)

AD-645 243 N/A 1967 UNCL

AMERICAN INSTITUTES FOR RESEARCH PITTSBURGH PA INST FOR PERFORMANCE TECHNOLOGY

AN EXPERIMENTAL ANALYSIS OF SELECTED PROBLEMS OF LARGE-SHELTER MANAGEMENT, ENVIRONMENTAL THREAT, AND SMALL-SHELTER HABITABILITY UNDER CONDITIONS OF STRESS. (U)

DESCRIPTIVE NOTE: FINAL REPT.,
SEP 66 220P MALE,JOHN F. ;
MEAGLEY,DONALD E. ;SMITH,ROBERT M. ;
DAVIS,ROBERT L. ;

REPT. NO. AIR-D93A(1/2)-9/66-FR

UNCLASSIFIED REPORT

DESCRIPTORS: (*FALLOUT SHELTERS, *MANAGEMENT ENGINEERING), CONFINED ENVIRONMENTS, STRESS(PSYCHOLOGY), UNDERWATER, BEHAVIOR, ANXIETY, CIVIL DEFENSE PERSONNEL, SUPERVISORY PERSONNEL, GAME THEORY, DECISION MAKING, TRAINING, LEADERSHIP, SIMULATION, SOCIAL PSYCHOLOGY (U)

THE RESEARCH PROGRAM WAS COMPOSED OF THREE MAJOR EFFORTS: (1) THE INITIAL DEVELOPMENT OF AND THE FEASIBILITY TESTING OF A LARGE-SHELTER CONTINGENCY GAME FOR USE IN THE ANALYSIS OF PROBLEMS ASSOCIATED WITH LARGE-SHELTER MANAGEMENT, (2) THE DEVELOPMENT OF TECHNIQUES FOR AND THE FEASIBILITY OF THE USE OF AN UNDERWATER SHELTER AS A METHOD FOR PRODUCING AN EXPERIMENTAL ANALOG OF THE THREAT ASSOCIATED WITH ACTUAL SHELTER HABITABILITY, AND (3) THE DESIGN AND EXECUTION OF FOUR 24 HOUR HABITABILITY STUDIES TO INVESTIGATE THE EFFECTS OF INCREASED REALISM OF A SHELTER STAY, IN TERMS OF THE NUMBER AND RANGE OF PROBLEMS PRESENTED TO THE SHELTEREES AND THE REALISTIC REPRESENTATION OF OTHER ASPECTS OF THE EXPECTED SHELTER ENVIRONMENT UNDER THE CONDITION OF NUCLEAR ATTACK. RESULTS OF THESE EFFORTS INDICATED THAT (1) THE CONTINGENCY GAME IS A MEANINGFUL AND FEASIBLE TECHNIQUE BY WHICH TO EXPLORE PROBLEMS OF LARGE SHELTER MANAGEMENT, (2) THE CONDITION OF BEING UNDERWATER APPEARED TO PRODUCE ANXIETY WHICH WAS REFLECTED IN PART BY MARKED ATTENTIVENESS TO ATMOSPHERIC MONITORING TASKS IN THE SHELTER, AN ATTENTIVENESS THAT APPEARED TO BE GREATER THAN THAT EXHIBITED TO THE ANALOGOUS TASK OF RADIOLOGICAL MONITORING IN THE SHELTER STUDIES, AND (3) SOME KNOWLEDGE OF THE CONCEPT OF DUAL-PURPOSE SHELTERS IS DESIRABLE ON THE PART OF THE PUBLIC; EBS PROGRAMMING SHOULD BE CONTINUOUS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-645 552 13/13 18/6
NAVAL RADIOLOGICAL DEFENSE LAB SAN FRANCISCO CALIF
EXPERIMENTAL AND CALCULATED ESTIMATES OF THE SHIELDING EFFECTIVENESS OF COMPARTMENTED STRUCTURES EXPOSED TO FALLOUT. (U)
JUL 66 61P SHUMWAY,BRUCE W. I
REPT. NO. USNRDL-TR-1045

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: RESEARCH SPONSORED IN PART BY OCD.

DESCRIPTORS: (*RADIOACTIVE FALLOUT, SHIELDING), (*STRUCTURES, *SHIELDING), FALLOUT SHELTERS, CIVIL DEFENSE SYSTEMS, WALLS, PROTECTION, NUMERICAL ANALYSIS, FLOORS, EFFECTIVENESS (U)

EXPOSURE REDUCTION FACTORS WERE MEASURED INSIDE SIX COMPARTMENTED STEEL STRUCTURES HAVING DIFFERENT WALL THICKNESSES RANGING FROM 1/4 TO 1-1/2 IN. THESE WERE EXPOSED TO RADIATION FROM FALLOUT OF VARYING AGE FROM THREE TO NINE DAYS. CALCULATIONS BASED UPON THE NELMS-COOPER GAMMA-RAY SPECTRUM AT H + 1.12 HOURS WERE MADE FOR SELECTED COMPARTMENTS IN EACH OF THE STRUCTURES FOLLOWING PROCEDURES GIVEN IN THE OFFICE OF CIVIL DEFENSE PROFESSIONAL MANUAL, PM-100-1. COMPARISON OF EXPERIMENT AND CALCULATION REVEALS A SENSITIVITY TO SPECTRAL CHANGES AND SHOWS THAT PROTECTION IS GREATER DURING THE PERIODS D + 3 TO D + 9 DAYS THAN AT H + 1.12 HOURS. OVERALL AGREEMENT IS GENERALLY SATISFACTORY. THE CALCULATIONAL METHODS FOR RADIATION THROUGH FLOORS, HOWEVER, APPEAR TO BE INADEQUATE. SPECTRA MEASURED ON SITE AT D + 3 AND D + 9 DAYS ARE GIVEN. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-846 847 13/13 15/3
HAYES SEAY MATTERN AND MATTERN MOANOKE VA
METHODS OF SHELTER COST ANALYSIS. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
FEB 67 168P BARKSDALE,BYRD H. ;
WADE,SAMUEL R. ;

UNCLASSIFIED REPORT

DESCRIPTORS: (*FALLOUT SHELTERS, COSTS,) DATA PROCESSING SYSTEMS, STANDARDS, DESIGN, CONSTRUCTION MATERIALS, LIGHTING EQUIPMENT, COOLING & VENTILATING EQUIPMENT, LABOR, MAINTENANCE, CONSTRUCTION, BUILDINGS, CIVIL DEFENSE SYSTEMS (U)

THE REPORT PRESENTS THE RESULTS OF AN EXAMINATION OF COMPUTER METHODS OF DETERMINING IMMEDIATE AND LONG-TERM TOTAL COST OF SHELTER INCORPORATED WITHIN A BUILDING AT A PRELIMINARY DESIGN STAGE. ALL COST ITEMS COMPRISING TOTAL COST WERE INVESTIGATED AND ANALYZED. THIS STUDY CONCLUDED THAT MANY OF THE ITEMS COMPRISING LONG-TERM TOTAL COST WERE INDETERMINATE TO SUCH A DEGREE THAT COMPUTER METHODS OF ANALYSIS WOULD NOT PRODUCE DEFENSIBLE ESTIMATES. TO DEVELOP A METHOD OF SHELTER COST ANALYSIS, AT A PRELIMINARY DESIGN STAGE, WILL REQUIRE DEVELOPMENT OF STANDARDS AND DESIGN LOGIC TO ANALYZE THE EFFECTS OF CHANGES IN BUILDING GEOMETRY AND COMPONENTS TO PROVIDE PROTECTION AGAINST EFFECTS OF NUCLEAR WEAPONS. THESE FACTORS, WHICH MAY BE IDENTIFIED, INFLUENCE COSTS AND A PROGRAM MAY BE DEVELOPED TO ACCOUNT FOR THE FACTORS IN PRODUCING ESTIMATES. ONCE THIS DATA IS DEVELOPED, AND WITH THE APPLICATION OF AN IN-PLACE UNIT METHOD OF COST ESTIMATING, REALISTIC IMMEDIATE ALTERNATIVE SHELTER COST ESTIMATES MAY BE PRODUCED. IT IS BELIEVED THAT DEVELOPMENT AND IMPLEMENTATION OF THESE TECHNIQUES WOULD MAKE IT PRACTICAL TO QUICKLY ASSESS PROTECTION FACTORS AND THE IMPACT OF COST OF CHANGES IN GEOMETRY, MASS, APERTURE, LIGHTING AND VENTILATION. PROBABLY ONE OF THE MOST USEFUL APPLICATIONS WOULD BE IN SENSITIVITY ANALYSIS OF SEVERAL ALTERNATIVES TO DETERMINE OPTIMUM SHELTER COST. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-648 319 5/11 15/3 13/13
AMERICAN INSTITUTES FOR RESEARCH PITTSBURGH PA SOCIAL SYSTEMS PROGRAM
PUBLIC INFORMATION AND KNOWLEDGE REQUISITES OF A SHELTER SYSTEM. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
SEP 66 156P BEND,EMIL ;COHEN,SUSAN ;
MCDANIEL,CLYDE ;
REPT. NO. AIR-D-93D-9/66-FR

UNCLASSIFIED REPORT

DESCRIPTORS: (*SHELTERS, CIVIL DEFENSE SYSTEMS), (*CIVIL DEFENSE SYSTEMS, *PUBLIC OPINION), SAMPLING, EDUCATION, CIVILIAN PERSONNEL (U)

THIS STUDY OF PUBLIC INFORMATION REQUIREMENTS FOR EFFECTIVE USE OF THE SHELTER SYSTEM IS COMPRISED OF THREE SEPARATE BUT RELATED PARTS. THE FIRST IS AN ANALYSIS OF THE TYPES OF ITEMS THAT MAKE UP THE MINIMUM REQUIRED PUBLIC INFORMATION CONTENT FOR EFFECTIVE SHELTER SYSTEM USE. PUBLIC INFORMATION IN REGARD TO THREAT WARNING, SHELTER-TAKING, AND IN-SHELTER SURVIVAL IS DISCUSSED. THE AUDIENCE FOR SHELTER INFORMATION, THE TIMING OF SHELTER INFORMATION CAMPAIGNS, AND THE MEDIA FOR PUBLIC INFORMATION ARE ALSO DISCUSSED. THE SECOND PART OF THE REPORT CONSISTS OF A DESCRIPTION OF A SHELTER INFORMATION STUDY, IN WHICH 278 VOLUNTEERS FOR AIR SHELTER RESEARCH PROJECTS WERE INTERROGATED ON THE NATURE AND EXTENT OF THEIR INFORMATION AND MISINFORMATION ABOUT SHELTER-RELATED SUBJECT MATTER. QUESTIONS WERE ASKED ABOUT KNOWLEDGE OF WARNING SIGNALS, EMERGENCY COMMUNICATIONS, SHELTERS AND SHELTER SUPPLIES, FALLOUT AND ITS EFFECTS. THE LAST SECTION OF THE REPORT CONTAINS THE RESULTS OF A CONTENT ANALYSIS TO THE PUBLIC BETWEEN 1950 AND THE PRESENT TIME. THE PURPOSE OF THE ANALYSIS WAS TO DISCOVER THE EMPHASES AND TRENDS IN THE SHELTER-RELATED GUIDANCE THAT THE GOVERNMENT HAS MADE AVAILABLE TO THE PUBLIC. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-648 363 13/2 13/13 13/1
OAK RIDGE NATIONAL LAB TENN
A SURVEY OF UNDERGROUND UTILITY TUNNEL PRACTICE, (U)
FEB 67 11CP BOEGLY,W. J. , JR.;
GRIFFITH,W. L. ;
REPT. NO. ORNL-TM-1714
CONTRACT: W-7405-ENG-26

UNCLASSIFIED REPORT

DESCRIPTORS: (*UNDERGROUND STRUCTURES, REVIEWS), (*FALLOUT SHELTERS, UNDERGROUND STRUCTURES), (*URBAN PLANNING, UNDERGROUND STRUCTURES), MILITARY FACILITIES, URBAN AREAS, UNIVERSITIES, CIVIL DEFENSE SYSTEMS, FEASIBILITY STUDIES, HEATING, COOLING, WATER SUPPLIES, FUELS, POWER SUPPLIES, COMMUNICATION SYSTEMS (U)
IDENTIFIERS: PUBLIC UTILITIES, TUNNELS (U)

A SURVEY HAS BEEN CONDUCTED ON THE USE OF UNDERGROUND, WALK-THROUGH TUNNELS FOR UTILITY SYSTEMS. RESULTS OF THIS SURVEY INDICATE THAT THIS CONCEPT HAS BEEN SUCCESSFULLY AND EXTENSIVELY EMPLOYED AT UNIVERSITIES AND GOVERNMENT INSTALLATIONS BUT IS NOT COMMONLY USED IN CITIES. THERE APPEARS TO BE NO SET CRITERIA OR DESIGN FOR UTILITY TUNNELS, AND AN OPTIMIZATION OF THE PARAMETERS IS NEEDED. SINCE MANY PARALLELS EXIST BETWEEN INSTITUTIONS AND EXPECTED URBAN RENEWAL PROJECTS, EXTRAPOLATION OF THE UTILITY TUNNEL CONCEPT TO THESE PROJECTS APPEARS WORTHWHILE. MODIFICATIONS TO UTILITY TUNNELS TO INCORPORATE CIVIL DEFENSE SHELTER SPACE APPEAR POSSIBLE, BUT FURTHER DESIGN STUDIES ARE REQUIRED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-648 492 13/10 15/3 13/1
FLORIDA UNIV GAINESVILLE ENGINEERING AND INDUSTRIAL EXPERIMENT STATION
SIMULATED OCCUPANCY SHELTER TESTS CONDUCTED DURING THE PERIOD OF JULY 5, 1962 THROUGH NOVEMBER 5, 1964. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
DEC 66 261P FLANIGAN,FRANK M. ;
MORRISON,CLAYTON A. ;BASS,PHILLIP L. ;
CONTRACT: OCD-OS-62-116

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH STANFORD RESEARCH INST., CALIF.

DESCRIPTORS: (*FALLOUT SHELTERS, ENVIRONMENT), (*RADIOACTIVE FALLOUT, FALLOUT SHELTERS), SIMULATION, CIVIL DEFENSE SYSTEMS, UNDERGROUND STRUCTURES, VENTILATION, HEATING, COOLING, CONSTRUCTION MATERIALS (U)

A SERIES OF TESTS USING SIMULATED OCCUPANTS WERE CONDUCTED ON 24 UNDERGROUND SURVIVAL SHELTERS LOCATED IN VARIOUS GEOGRAPHICAL AREAS OF THE UNITED STATES. THE PURPOSE OF THIS TEST PROGRAM WAS TO EVALUATE CHANGES IN SHELTER ENVIRONMENT BROUGHT ABOUT BY SHELTER OCCUPANTS. THESE SHELTERS WERE LOADED WITH SIMULATED OCCUPANTS IN A MANNER SIMILAR TO THE LOADING ANTICIPATED DURING A NATIONAL EMERGENCY BROUGHT ABOUT DUE TO RADIOACTIVE FALLOUT AS THE RESULT OF A NUCLEAR ATTACK. A SECONDARY OBJECTIVE OF THIS PROGRAM WAS TO DETERMINE THE MINIMUM AMOUNT OF MECHANICAL EQUIPMENT NECESSARY TO CONTROL THE SHELTER ENVIRONMENT TO A LEVEL SUITABLE FOR HUMAN SURVIVAL. IN ACCORD WITH GUIDELINES ESTABLISHED BY THE OFFICE OF CIVIL DEFENSE MOST OF THE TEST SHELTERS WERE LOADED ON THE BASIS OF ONE OCCUPANT PER TEN SQUARE FEET OF FLOOR AREA. HOWEVER, SPECIAL SHELTERS SUCH AS THE ST. LOUIS COMMAND CENTER WERE TESTED AT LOWER LOADINGS AND DURING THE COURSE OF THE PROGRAM OTHER SHELTER LOADINGS WERE USED TO INVESTIGATE THE EFFECT OF SHELTER LOADING ON THE ENVIRONMENT WITHIN THE SHELTER. VENTILATION AIR WAS CONDITIONED TO CONFORM TO TYPICAL VALUES OF EFFECTIVE TEMPERATURE FOR THE TEST LOCALE. SHELTERS WERE TESTED UNDER SIMULATED SUMMER AND WINTER CLIMATIC CONDITIONS. SIMULATED OCCUPANTS WERE USED AND ADJUSTED SO AS TO RELEASE SENSIBLE AND LATENT HEAT TO THE SHELTER ATMOSPHERE IN QUANTITIES EQUIVALENT TO THOSE THAT WOULD BE RELEASED BY HUMAN OCCUPANTS. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-648 870 13/13 5/1 15/3
AMERICAN INSTITUTES FOR RESEARCH PITTSBURGH PA SOCIAL SYSTEMS PROGRAM
RESEARCH DATA FROM SHELTER OCCUPANCY EXERCISES. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
DEC 66 143P COLLINS,ROBERT A. ;
BEND,EMIL ;
REPT. NO. AIR-D66-12/66-FR
CONTRACT: OCD-OS-63-97
PROJ: 1517A

UNCLASSIFIED REPORT

DESCRIPTORS: (*FALLOUT SHELTERS, CIVIL DEFENSE SYSTEMS), (*MANAGEMENT ENGINEERING, FALLOUT SHELTERS), STUDENTS, INSTRUCTORS, QUESTIONNAIRES, PROGRAMMING(COMPUTERS), INFORMATION RETRIEVAL, DATA STORAGE SYSTEMS (U)

THE PURPOSE OF THIS PROJECT WAS TO COLLECT AND ANALYZE HABITABILITY DATA FROM CIVIL DEFENSE UNIVERSITY EXTENSION PROGRAM (CDUEP) SCHOOL EXERCISES. AS INITIALLY DEFINED, THE DATA WERE TO INCLUDE: (1) INFORMATION RELATED TO EXPERIMENTAL MANIPULATIONS, WHERE INTRODUCED INTO THE EXERCISES, (2) BACKGROUND INFORMATION ON PARTICIPATING STUDENTS, AND (3) OTHER DATA RELATED TO THE OCCUPANCY EXERCISES (SUPPLIES AND EQUIPMENT, GENERAL FEELINGS ABOUT THE EXPERIENCE, AND MANAGEMENT DATA). TWO DATA COLLECTION INSTRUMENTS WERE DEVELOPED, BOTH SELF-ADMINISTERING: ONE FOR THE STUDENTS AND ONE FOR THE INSTRUCTOR OF THE COURSE. PROCEDURES WERE DEVELOPED FOR CODING THIS DATA AND ENTERING CODES ONTO PUNCHED IBM CARDS FOR LATER TRANSFERENCE TO MAGNETIC TAPE FOR PURPOSES OF ULTIMATE STORAGE AND ANALYSIS. MARGINAL DISTRIBUTIONS FOR STUDENT AND INSTRUCTOR QUESTIONNAIRE DATA ARE EXHIBITED IN TABLE FORM AND DISCUSSED. SELECTED CROSS TABULATIONS ARE EXHIBITED AND DISCUSSED. SUGGESTED IDEAS FOR FUTURE RESEARCH ARE LISTED. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-650 323 13/12 13/13
IIT RESEARCH INST CHICAGO ILL TECHNOLOGY CENTER
DEVELOPMENT OF STANDARD FIRE TEST RATING SYSTEMS FOR SHELTER COMPONENTS. (U)
DESCRIPTIVE NOTE: FINAL REPT., 30 SEP 63-20 FEB 66,
DEC 66 164P LABES,WILLIS G. ;
WATERMAN,THOMAS E. ;VARLEY,REED B. ;
REPT. NO. IITRI-N6061

UNCLASSIFIED REPORT

DESCRIPTORS: (*FALLOUT SHELTERS, *FIRE SAFETY), (*FIRES, STRUCTURES), SMOKES, BUILDINGS, CONSTRUCTION, BLAST, RADIOACTIVE FALLOUT, HEAT TRANSFER, EXPOSURE, TOXICITY, CIVIL DEFENSE SYSTEMS, CONSTRUCTION MATERIALS (U)

IN THIS STUDY FIRE TESTS FOR THE PURPOSE OF RATING STRUCTURAL COMPONENTS OF BLAST SHELTERS AND FALLOUT SHELTERS ARE CONSIDERED. EXISTING FIRE TEST PROCEDURES FOR BUILDING CONSTRUCTION AND MATERIALS, DOOR ASSEMBLIES, AND WINDOW ASSEMBLIES ARE ANALYZED TO DETERMINE HOW RESULTS FROM THESE TESTS MAY BE APPLIED TOWARD THE DEVELOPMENT OF A SYSTEM FOR RATING SHELTER COMPONENTS. SHELTER COMPONENT PERFORMANCE REQUIREMENTS IN REGARD TO HEAT TRANSMISSION, SMOKE AND TOXIC GAS BUILD-UP IN SHELTER AREAS, AND FIRE SPREAD AND STRUCTURAL COLLAPSE ARE DESCRIBED. FIRE EXPOSURES FOR THE RATING OF SHELTER COMPONENTS ARE DESCRIBED AND CLASSIFIED ACCORDING TO THEIR CHARACTERISTIC MODES OF HEAT TRANSFER. THE SOURCES OF THESE EXPOSURES, DESCRIBED AS EXPOSURES FROM FIRE WITHIN THE SHELTER BUILDING, FROM FIRE IN INDIVIDUAL NEARBY BUILDINGS, FROM MASS FIRE, AND FROM DEBRIS FIRE, ARE ANALYZED AND INTERIM DATA PRESENTED ON EXPOSURE SEVERITY. A USEFUL CONCEPT FOR THE COMPARISON OF FIRE EXPOSURES, BASED UPON THEIR EFFECTS ON EACH TYPE OF COMPONENT, IS DEFINED. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-660 930 15/3
RESEARCH TRIANGLE INST DURHAM N C OPERATIONS RESEARCH AND ECONOMICS DIV
PROTECTION ANALYSIS AND CONSTRUCTION EVALUATION SYSTEM. (U)
DESCRIPTIVE NOTE: FINAL REPT., 13 JAN 65-15 JAN 66,
JAN 66 31P BRYAN,F. A., JR.;
HILL,E. L.; HOWARD,B. W.; JOHNSON,T. ;
LYDAY,R. O. ;
REPT. NO. RTI-R-UU-205

UNCLASSIFIED REPORT

DESCRIPTORS: (*FALLOUT SHELTERS, *COMPUTER PROGRAMS), CIVIL DEFENSE SYSTEMS, PROTECTION, RADIOACTIVE FALLOUT, STRUCTURES, COMPUTERS, ANALYSIS, DESIGN (U)

THE TASK ASSIGNMENTS IN THIS PROJECT WERE PRINCIPALLY CONCERNED WITH THE IMPLEMENTATION OF A CDC-3600 COMPUTER PROGRAM FOR COMPUTING PF'S OF STRUCTURES (PF-COMP) AS WELL AS WITH ADDITIONS TO THE PROGRAM WHICH WOULD MAKE IT MORE USEFUL TO ARCHITECTS AND ENGINEERS. THE PROGRAM WAS IMPLEMENTED BY THE RESEARCH TRIANGLE INSTITUTE (RTI) THROUGH THE OFFICE OF CIVIL DEFENSE FIRST IN THE PERFORMANCE OF THE MILITARY OVERSEAS SHELTER SURVEY (MOSS) AND SUBSEQUENTLY IN THE ANALYSIS OF FEDERAL BUILDINGS DESIGNATED BY THE OFFICE OF CIVIL DEFENSE. FINALLY, IMPLEMENTATION OF THE COMPUTER PROGRAM AS A SERVICE TO QUALIFIED FALLOUT SHELTER ANALYSTS WAS PERFORMED IN THE SHELTER ANALYSIS FOR NEW DESIGNS (SAND) PROGRAM. A PRINCIPAL ADDITION TO THE PF-COMP COMPUTER PROGRAM WHICH WILL RENDER IT MORE USEFUL TO ARCHITECTS AND ENGINEERS CONSISTED OF AN ANALYTICAL ROUTINE FOR COST EFFECTIVENESS MODIFICATION OF STRUCTURES TO IMPROVE BASEMENT SHELTER PF. INCORPORATED AS A SUBROUTINE IN THIS SUPPLEMENTARY PROGRAM IS A TECHNIQUE WHICH PERMITS DEFINITION OF SHELTER BOUNDARY AS A FUNCTION ONLY OF PERCENTAGE ROOF CONTRIBUTION AND SHELTER LOCATION WITHIN A STRUCTURE. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML47

AD-651 167 15/3
PITTSBURGH UNIV PA DEPT OF SOCIOLOGY
COST AND FINANCING OF CIVIL DEFENSE: SOME PUBLIC VIEWS. (U)
FEB 67 77P COLEMAN,ALAN N. ;
CONTRACT: DAHC20-67-C-0122, NSF G113C9

UNCLASSIFIED REPORT

DESCRIPTORS: (*CIVIL DEFENSE SYSTEMS, ECONOMICS), COSTS, FALLOUT SHELTERS, PUBLIC OPINION (U)

THE REPORT ATTEMPTS TO BRING TOGETHER, FROM A NUMBER OF NATIONAL AND COMMUNITY STUDIES, THE RESULTS REGARDING THE AMERICAN PUBLIC'S VIEWS ON THE COST AND FINANCING OF CIVIL DEFENSE MEASURES AND PROGRAMS. GIVEN THE LIMITATIONS IMPOSED BY THE NUMBER AND DIVERSITY OF THE STUDIES USED, THE FOLLOWING GENERALIZATIONS OBTAINED: (1) INCREASING CIVIL DEFENSE EXPENDITURES IN GENERAL IS BELIEVED DESIRABLE; (2) MANY CITIZENS ARE UNCERTAIN ABOUT WHAT FALLOUT PROTECTION SHOULD COST; (3) PERSONAL ASSUMPTION OF THE TOTAL OR EVEN PARTIAL COST FOR FAMILY SHELTERS IS NOT FAVORED; (4) MAJOR OBJECTIONS TO FAMILY FALLOUT SHELTERS INVOLVE COST; (5) FAVORABILITY OF PUBLIC AS WELL AS FAMILY FALLOUT SHELTERS IS INCREASED WHEN FEDERAL OR STATE FINANCIAL ASSISTANCE IS INCLUDED; (6) A SUBSTANTIAL PORTION OF THE CITIZENRY FAVORS A TAX REDUCTION OR EXEMPTION FOR SHELTERS; (7) INDIRECT INDUCEMENTS FOR BUILDING SHELTERS GENERALLY MEET THE APPROVAL OF THE PUBLIC; (8) SPECIFIED ALTERNATIVE METHODS OF FINANCING SHELTERS HAVE BEEN MET WITH DISAPPROVAL OR UNCERTAINTY; (9) PUBLIC SHELTERS ARE VIEWED AS EFFECTIVE AND WORTH THE COST; (10) AMONG ALTERNATIVE PROGRAMS, EDUCATION AND HEALTH RANK AHEAD OF CIVIL DEFENSE MEASURES, AND VERY FEW PEOPLE CURRENTLY AGREE THAT CIVIL DEFENSE MONIES WOULD BE BETTER SPENT ON MISSILES AND BOMBERS. THE MAJORITY OF THE STUDIES UTILIZED WERE CONDUCTED IN THE EARLY 1960'S--A TIME WHEN THE FAMILY SHELTER CONTROVERSY REACHED ITS APEX. GENERAL COST AND FINANCING ISSUES AND ALTERNATIVES HAVE NOT BEEN PROBED EXTENSIVELY IN NATIONAL AND COMMUNITY SURVEYS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-65 182 13/13
OFFICE OF CIVIL DEFENSE WASHINGTON D C
BUILDINGS WITH FALLOUT SHELTER. (U)
JUL 66 57P
REPT. NO. OCD-TR-37

UNCLASSIFIED REPORT
AVAILABILITY: HARD COPY AVAILABLE FROM USA PUBLICATION CENTER, CIVIL DEFENSE BRANCH, 2800 EASTERN BLVD. (MIDDLE RIVER), BALTIMORE, MD. 21220.
SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH DEPARTMENT OF DEFENSE, WASHINGTON, D. C.

DESCRIPTORS: (*FALLOUT SHELTERS, *CIVIL DEFENSE SYSTEMS), (*BUILDINGS, SHIELDING), NUCLEAR EXPLOSION DAMAGE, NUCLEAR RADIATION, CONSTRUCTION, COSTS, NUCLEAR WARFARE (U)

THE BOOKLET CONTAINS DESCRIPTIONS, PHOTOGRAPHS, DRAWINGS AND COST ANALYSES OF VARIOUS TYPES OF NEW BUILDINGS WITH BUILT-IN FALLOUT PROTECTION. ARCHITECTS AND ENGINEERS KNOWLEDGEABLE IN SHIELDING TECHNIQUES CAN INCORPORATE THE ADDITIONAL FALLOUT PROTECTION FOR LITTLE, IF ANY, INCREASE IN COST, WHETHER THE BUILDING IS A SCHOOL, BANK, LIBRARY, CHURCH, DORMITORY, OFFICE BUILDING, INDUSTRIAL FACILITY OR HOME FOR THE AGED. THE SHIELDING TECHNIQUES ARE APPLICABLE TO ALL TYPES OF BUILDINGS. THE PROJECTS SHOWN HERE ARE ATTRACTIVE AND CONTAIN FALLOUT SHELTER IN ABOVEGROUND AS WELL AS BELOWGROUND LOCATIONS. THE SHELTER AREAS ARE IN CONTINUOUS USE AS PART OF THE NORMAL BUILDING FUNCTION AND HAVE BEEN PROVIDED WITHOUT ADVERSELY AFFECTING THE COST OR APPEARANCE. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-651 805 13/13 15/3

HUDSON INST INC HARMON-ON-HUDSON N Y

ON THE DESIGN OF RISK-ORIENTED, LOW COST FALLOUT SHELTER SYSTEMS. (U)

DESCRIPTIVE NOTE: FINAL REPT.,

MAR 67 39P ROCKETT,FREDERICK C. ;

BROWN,WILLIAM M. ;

REPT. NO. HI-486/3-RR

UNCLASSIFIED REPORT

DESCRIPTORS: (*FALLOUT SHELTERS, *DESIGN), (*CIVIL DEFENSE SYSTEMS, *COSTS), RADIOACTIVE FALLOUT, SURVIVAL, COMPUTERS, VULNERABILITY, EVACUATION, UNDERGROUND STRUCTURES, MILITARY STRATEGY, RADIATION EFFECTS, HOUSING, RADIATION TOLERANCE, URBAN AREAS, TABLES, RURAL AREAS, UNITED STATES (U)

THE PAPER ARGUES THAT FOR EACH OF A SPECTRUM OF *INTERESTING ATTACKS,* CALCULATIONS OF MINIMUM REQUIRED FALLOUT PROTECTION WHICH WOULD ASSURE HIGH SURVIVAL PROBABILITIES CAN BE MADE FOR EACH U. S. COMMUNITY. SUCH CALCULATIONS WOULD PROVIDE A BASIS FOR LOCAL CD PLANNING TO REDUCE THE VULNERABILITY TO FALLOUT. IF THE CD PROGRAM COMBINED THIS *BALANCED FALLOUT PROTECTION* WITH EMERGENCY EVACUATION FROM THE MORE VULNERABLE AREAS, THEN THE SURVIVAL POTENTIAL COULD BECOME VERY GREAT IN SITUATIONS WHICH OFFERED A FEW DAYS OR MORE OF STRATEGIC WARNING. THE SHELTER RESOURCES IN THE U. S. AND THEIR POTENTIAL FOR SUCH A CD PROGRAM ARE ANALYSED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-651 944 6/8 15/3
STANFORD RESEARCH INST MENLO PARK CALIF
ACCEPTABILITY OF SHELTER RATIONS IN COMBINATION WITH ADJUNCTS. (U)
DESCRIPTIVE NOTE: INTERIM REPT., APR 66-FEB 67, MAR 67 16P STONE,HERBERT ; OLIVER,SHIRLEY M. ;SINGLETON,RICHARD C. ;
PROJ: SRI-4949-500

UNCLASSIFIED REPORT

DESCRIPTORS: (*FOOD, *ACCEPTABILITY), FALLOUT SHELTERS, TASTE, CIVIL DEFENSE SYSTEMS, FRUITS, CONDIMENTS, SUCROSE, FOOD DISPENSING, TESTS (U)

IMPROVEMENT IN RATION ACCEPTABILITY WAS APPROACHED THROUGH THE USE OF ADJUNCTS (FLAVORED SPREADS) IN COMBINATION WITH THE RATIONS. OF THE 14 ADJUNCTS TESTED, ONLY 8 WERE FOUND TO BE PREFERABLE TO THE RATION ALONE WHEN TASTED IN A PAIRED-COMPARISON TEST. THE THREE ADJUNCTS RECEIVING THE HIGHEST SCORES (STRAWBERRY JELLY, WILD CHERRY JELLY, AND LEMON JELLY) SHOULD BE CONSIDERED FOR STORAGE IN CIVIL DEFENSE SHELTERS. THESE RESULTS WERE BASED ON EXPERIMENTS INVOLVING 12 SUBJECTS FOR EACH OF THE 42 ADJUNCT-RATION COMBINATIONS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-653 018 13/13 15/3
GENERAL AMERICAN TRANSPORTATION CORP NILES ILL GENERAL AMERICAN RESEARCH DIV
PSYCHOLOGICAL, ENGINEERING, AND PHYSIOLOGICAL EVALUATION OF SHELTER EQUIPMENT AND PROCEDURES. VOLUME I. SUMMARY AND REVIEW. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
FEB 67 35P MEIER,H. A. ;ENGHOLM,G. ;
REPT. NO. GARD-1292-VOL-1
PROJ: 1522A

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME II - AD-653 019; VOLUME III - AD-653 020.

DESCRIPTORS: (*FALLOUT SHELTERS, *CIVIL DEFENSE SYSTEMS), SYSTEMS ENGINEERING, VENTILATION, COOLING, MANAGEMENT ENGINEERING, INSTRUCTION MANUALS, PHYSIOLOGY, PSYCHOLOGY, FOOD, WATER SUPPLIES, TOILET FACILITIES, STRESSES (U)

A SERIES OF NON-OCCUPANCY AND SHELTER OCCUPANCY STUDIES WERE CONDUCTED WHICH EVALUATED THE ABILITY OF TYPICAL SHELTEREES TO USE (1) A PACKAGE VENTILATION KIT (PVK), (2) THREE TYPES OF EFFECTIVE TEMPERATURE METERS, (3) A TOXIC GAS DETECTOR, AND (4) A PROTOTYPE DRINKING WATER DISPENSER; AND TO EVALUATE THE ABILITY OF THIS EQUIPMENT TO INTEGRATE INTO THE SHELTER SYSTEM. THE SHELTEREES CAN ASSEMBLE THE PVK BUT CANNOT DEPLOY IT CORRECTLY UNLESS THEY ARE SUPPLIED WITH DETAILED PHOTOGRAPH-FLOOR PLAN INSTRUCTIONS. THE PVK'S IMPACT ON THE SHELTER SYSTEM IS MINIMAL. AT A LOW WATER LEVEL, THE WATER DISPENSER PROVED AWKWARD. THE TOXIC GAS DETECTOR IS NOT EASILY OPERATED AND THE EFFECTIVE TEMPERATURE METERS ARE GENERALLY READ IN ERROR. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-653 019 13/13 15/3
GENERAL AMERICAN TRANSPORTATION CORP NILES ILL GENERAL AMERICAN RESEARCH DIV
PSYCHOLOGICAL, ENGINEERING, AND PHYSIOLOGICAL EVALUATION OF SHELTER EQUIPMENT AND PROCEDURES. VOLUME II. LABORATORY STUDIES. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
FEB 67 18P HALE,J. F. ;BEHLS,K. F.
;
REPT. NO. GARD-1292-VOL-2
PROJ: 1522A

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: DOCUMENT CONTAINS COLOR, REPRODUCTION IN B/W ONLY. SEE ALSO VOLUME I - AD-653 018; VOLUME III - AD-653 020.

DESCRIPTORS: (*FALLOUT SHELTERS, *CIVIL DEFENSE SYSTEMS), SYSTEMS ENGINEERING, COOLING, VENTILATION, MANAGEMENT ENGINEERING, INSTRUCTION MANUALS, PHYSIOLOGY, PSYCHOLOGY, WATER SUPPLIES (U)

TWO SERIES OF NON-OCCUPANCY TESTS EXAMINED THE EFFECTIVENESS OF VARIOUS KINDS OF INSTRUCTIONS DESIGNED TO SUPPORT THE USE OF (1) A PACKAGE VENTILATION KIT (PVK), (2) THREE TYPES OF EFFECTIVE TEMPERATURE (ET) METERS, (3) A TOXIC GAS DETECTOR, AND (4) THE OCD WATER DISPENSER BY PERSONS UNFAMILIAR WITH THESE DEVICES. IN THE FIRST STUDY, SUBJECTS WERE ABLE TO ASSEMBLE THE PVK BUT UNABLE TO DEPLOY IT CORRECTLY. THE ET METERS WERE GENERALLY READ IN ERROR. AT A LOW WATER LEVEL, THE WATER DISPENSER WAS NOT USED PROPERLY. IN THE SECOND STUDY, SUBJECTS WERE ABLE TO DEPLOY THE PVK USING PHOTOGRAPH-FLOOR PLAN INSTRUCTIONS. PREFABRICATED DUCTWORK REDUCED THE INSTALLATION TIME, BUT PROBLEMS WITH TWISTING OF THE DUCT OCCURRED. A PVK INSTRUCTION MANUAL IS PRESENTED WHICH EMPLOYS THE RESULTS OF BOTH TEST SERIES. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-653 020 13/13 15/3
GENERAL AMERICAN TRANSPORTATION CORP NILES ILL GENERAL AMERICAN RESEARCH DIV
PSYCHOLOGICAL, ENGINEERING, AND PHYSIOLOGICAL EVALUATION OF SHELTER EQUIPMENT AND PROCEDURES. VOLUME III. HABITABILITY STUDIES. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
FEB 67 222P SMITH,R. W. ;MADSON,C. A. ;
REPT. NO. GARD-1292-VOL-3
PROJ: 1522A

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME I - AD-653 018; VOLUME II - AD-653 019.

DESCRIPTORS: (*FALLOUT SHELTERS, *CIVIL DEFENSE SYSTEMS), SYSTEMS ENGINEERING, COOLING, VENTILATION, MANAGEMENT ENGINEERING, INSTRUCTION MANUALS, PHYSIOLOGY, PSYCHOLOGY, WATER SUPPLIES (U)

THREE SHELTER HABITABILITY TESTS EXAMINED THE EFFECTIVENESS OF INSTRUCTIONS AND JOB AIDES DESIGNED TO SUPPORT THE USE OF (1) A PACKAGE VENTILATION KIT, (2) EFFECTIVE TEMPERATURE METERS, (3) A TOXIC GAS DETECTOR, (4) THE OCD WATER DISPENSER, (5) AND OTHER SHELTER EQUIPMENT BY UNTRAINED SUBJECTS AND THE EFFECT OF THESE EQUIPMENTS ON THE SHELTER ORGANIZATION AND MANAGEMENT. OTHER FACTORS RELATED TO SHELTER OCCUPANCY ARE ALSO DISCUSSED, SUCH AS ROLE CONFLICT AND DEFECTIONS. RECOMMENDATIONS ARE GIVEN FOR IMPROVEMENT IN THE INSTRUCTIONS, DEVICES, AND SHELTER MANAGEMENT. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-653 475 18/8
OFFICE OF CIVIL DEFENSE WASHINGTON D C POSTATTACK RESEARCH DIV
FALLOUT RADIATION EXPOSURE CONTROL (AN INTRODUCTION).
(U)
65 53P GREENE,JACK C. ;

UNCLASSIFIED REPORT

DESCRIPTORS: (*RADIOACTIVE FALLOUT, *CONTROL), EXPOSURE, FALLOUT SHELTERS, CONTAMINATION, SOLUBILITY, RADIOACTIVITY, WATER SUPPLIES, CIVIL DEFENSE SYSTEMS, FOOD, INTENSITY, RADIOACTIVE DECAY, EFFECTIVENESS, PHYSICAL PROPERTIES, TESTS, PROTECTION
(U)

THE PAPER IS INTENDED FOR USE BY POSTATTACK RESEARCH CONTRACTORS AND OTHER INTERESTED PERSONS AS A SUMMARY STATEMENT ON THE PROBLEMS OF RADIATION EXPOSURE CONTROL WITH EMPHASIS ON THE PERIOD AFTER PEOPLE EMERGE FROM SHELTER. THIS PAPER IS THE FIRST OF ITS KIND ON THE SUBJECT AND, FOR THIS REASON, CERTAIN BACKGROUND MATERIAL IS INCLUDED. AN EFFORT IS MADE TO IDENTIFY AND DISCUSS PROBLEMS IN SIMPLE AND DIRECT LANGUAGE, AND TO RELATE TO OPERATIONAL SITUATIONS. LOSS OF PRECISION THAT RESULTS THEREBY IS NOT LIKELY TO CHANGE THE IMPLICATIONS AND CONCLUSIONS IN ANY IMPORTANT WAY. REFERENCES LISTED AT THE END OF THE PAPER CONTAIN THE UP-TO-DATE SCIENTIFIC INFORMATION ON THIS SUBJECT; ALSO, FOOTNOTES ARE USED IN SOME CASES TO PROVIDE SUPPLEMENTAL INFORMATION.
(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-653 879 15/3 5/1 13/13
GEORGIA UNIV ATHENS CIVIL DEFENSE RESEARCH
SHELTER OCCUPANCY STUDIES-UNIVERSITY OF GEORGIA
(1966). VOLUME II. COMMUNITY FALLOUT SHELTER
HANDBOOK FOR UNTRAINED MANAGEMENT. (U)
DESCRIPTIVE NOTE: ED. NO. 7,
DEC 66 147P HAMMES,JOHN A. ;
AHEARN,THOMAS R. ;

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: CONTINUATION OF CONTRACT OCD-PS-65-45. SEE ALSO VOLUME 1, AD-653 881.

DESCRIPTORS: (*FALLOUT SHELTERS, MANAGEMENT ENGINEERING), HANDBOOKS, INSTRUCTION MANUALS, LEADERSHIP, CIVIL DEFENSE SYSTEMS, TRAINING, CIVIL DEFENSE PERSONNEL, MEDICAL SUPPLIES, CONFINED ENVIRONMENTS, NUTRITION, RECREATION, SANITARY ENGINEERING, MEDICAL EXAMINATION (U)

AN INSTRUCTION MANUAL IS PRESENTED FOR TEMPORARY SHELTER MANAGERS. A HANDBOOK FOR PERMANENT SHELTER MANAGERS IS ALSO INCLUDED. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-653 881 15/3 5/1 13/13
GEORGIA UNIV ATHENS CIVIL DEFENSE RESEARCH
SHELTER OCCUPANCY STUDIES AT THE UNIVERSITY OF
GEORGIA (1966), VOLUME I. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
DEC 66 403P HAMMES,JOHN A. ;
AHEARN,THOMAS R. ;

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: CONTINUATION OF CONTRACT OCD-PS-65-45. SEE ALSO VOLUME 2, AD-653 879.

DESCRIPTORS: (*FALLOUT SHELTERS, MANAGEMENT ENGINEERING), EXPERIMENTAL DESIGN, LEADERSHIP, CIVIL DEFENSE SYSTEMS, TRAINING, CIVIL DEFENSE PERSONNEL, MEDICAL SUPPLIES, CONFINED ENVIRONMENTS, SANITARY ENGINEERING, NUTRITION, MEDICAL EXAMINATION, PERSONALITY TESTS, TOILET FACILITIES, RECREATION, HANDBOOKS (U)

IN THE PERIOD 1962-66, THE CIVIL DEFENSE RESEARCH STAFF AT THE UNIVERSITY OF GEORGIA HAS CONDUCTED TEN SIMULATED FALLOUT SHELTER OCCUPANCY STUDIES. THESE TESTS INVOLVED HEALTHY MEN, WOMEN, AND CHILDREN, NINE MONTHS THROUGH SEVENTY-THREE YEARS OF AGE, IN GROUPS OF THIRTY TO FIVE HUNDRED PERSONS, CONFINED FOR PERIODS OF TWO DAYS TO TWO WEEKS UNDER RATHER AUSTERE SHELTER CONDITIONS. DETAILED FINDINGS OF THESE OCCUPANCY TESTS HAVE BEEN PRESENTED IN PREVIOUS ANNUAL REPORTS. THE PRESENT REPORT CONTAINS FINDINGS OF THE 1966 OCCUPANCY TESTS, AS WELL AS A SYNTHESIS OF ALL STUDIES TO DATE, AND THE IMPLICATIONS FOR RESEARCH IN THE NATIONAL SHELTER PROGRAM. A RESEARCH PROTOTYPE COMMUNITY SHELTER HANDBOOK FOR UNTRAINED MANAGEMENT IS INCLUDED. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-654 478 15/3
HUDSON INST INC HARMON-ON-HUDSON N Y
CRISIS CIVIL DEFENSE AND DETERRENCE, (U)
APR 67 85P ROCKETT,FREDERICK C. I
REPT. NO. HI-777/2-RR

UNCLASSIFIED REPORT

DESCRIPTORS: (*CIVIL DEFENSE SYSTEMS, *USSR), (*EASTERN EUROPE, CIVIL DEFENSE SYSTEMS), (*CHINA, CIVIL DEFENSE SYSTEMS), DETERRENCE, NATIONAL DEFENSE, UNITED STATES, TRANSPORTATION, EVACUATION, URBAN AREAS, FALLOUT SHELTERS, SURVIVAL, INDUSTRIES, VULNERABILITY, RECOVERY (U)

THE REPORT EXAMINES THE POTENTIAL OF THE SOVIET UNION, CHINA, AND SOME EUROPEAN NATIONS FOR REDUCING THEIR VULNERABILITY TO NUCLEAR ATTACK THROUGH EMERGENCY CIVIL DEFENSE MEASURES TAKEN DURING AN INTENSE CRISIS. IT IS ARGUED THAT THIS CD POTENTIAL BY SUBSTANTIALLY REDUCING THE NUMBER OF HOSTAGES AND PROVIDING AN IMPROVED RECOVERY CAPABILITY, HAS SOME IMPLICATIONS FOR U.S. DETERRENCE POLICY. THUS, IF DETERRENCE POLICY IS THOUGHT TO REQUIRE A LARGE NUMBER OF URBAN HOSTAGES, IT MAY NEED TO BE REVIEWED IN LIGHT OF THE ABOVE POSSIBILITY. A SURVEY OF THE CD POLICIES AND CAPABILITIES OF THE ABOVE COUNTRIES SUGGESTS THAT A PRIMARY CRISIS CD MEASURE COULD BE AN URBAN EVACUATION TO EXPEDIENT OR IMPROVISED FALLOUT PROTECTION. IN ADDITION, IN SOME CRISIS ENOUGH TIME MIGHT BE AVAILABLE TO MOVE SOME PERSONAL PROPERTY AND PERHAPS SOME CRITICAL INDUSTRIAL RESOURCES OUT OF THE MORE LIKELY TARGET AREAS. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-655 270 5/11 15/3
PITTSBURGH UNIV PA DEPT OF SOCIOLOGY
SHELTER ASSIGNMENT CONCEPT: A STUDY IN PUBLIC ACCEPTANCE, (U)
APR 67 104P NEMNEVAJSA,JIRI ;
CONTRACT: DAHC20-67-C-0122

UNCLASSIFIED REPORT

DESCRIPTORS: (*FALLOUT SHELTERS, PUBLIC OPINION), CIVIL DEFENSE SYSTEMS, ACCEPTABILITY, SOCIOLOGY, ATTITUDES, TABLES (U)

THE REPORT ELABORATES RESPONSES OF 1,497 NATIONALLY SAMPLED AMERICANS TO AN ITEM PROBING INTO DESIRABILITY OF PROVIDING THE NATION WITH ASSIGNED SHELTERING CLOSE TO HOME AND WORK BY DEMOGRAPHIC, SOCIO-CULTURAL AND SELECTED ATTITUDINAL CHARACTERISTICS. THE DATA ARE DRAWN FROM THE 1966 FIELD STUDY. IN THIS MANNER, THE PERSPECTIVES REGARDING SHELTER ASSIGNMENT ARE EVALUATED BY 87 DEMOGRAPHIC, AND 137 ATTITUDINAL, SUBGROUPS OF OUR POPULATION. THE FINDINGS INDICATE THAT THE SHELTER ASSIGNMENT CONCEPT IS QUITE ACCEPTABLE TO THE NATION. UNFAVORABLE EXPRESSIONS OCCUR WITH LOW FREQUENCIES, AND ONLY FOUR OF ALL THE SUBGROUPS CONSIDERED ACTUALLY YIELD A NEGATIVE DESIRABILITY AVERAGE IN RELATION TO THE QUESTION. OF THESE SUBGROUPS, IN FACT, THREE REPRESENT RESPONDENTS WHO ASSIGNED NEGATIVE DESIRABILITY VALUES OF (-1) OR (-2) OR (-3) ON THE OVERALL SCALE (FROM +3 TO -3) TO CIVIL DEFENSE EFFORTS IN GENERAL. BY AND LARGE, AND WITHIN THE OVERALL PATTERN OF FAVORABLENESS, THE ATTITUDINAL VARIABLES (COLD WAR, VIETNAM AND SIMILAR FACTORS) DIFFERENTIATE AMONG THE RESPONDENT SUBGROUPS CONSISTENTLY MORE THAN DO DEMOGRAPHIC CHARACTERISTICS. IN VIEW OF THE FACT THAT POSITIVE ASSESSMENTS ACTUALLY EXCEED TWO-THIRDS OF THE RESPONDENTS AND THE CONCEPT DISAPPROVAL IS NOT TYPICAL OF SPECIFIC SEGMENTS OF OUR POPULATION, IT IS CONCLUDED THAT SOMETHING OF NATIONAL CONSENSUS PREVAILS WITH REGARD TO THE DESIRABILITY OF SHELTER ASSIGNMENT. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD=655 284 15/3
IIT RESEARCH INST CHICAGO ILL
CIVIL DEFENSE SHELTER OPTIONS FOR FALLOUT AND BLAST PROTECTION (DUAL-PURPOSE). (U)
DESCRIPTIVE NOTE: FINAL REPT. AND SUMMARY MAR 65-NOV 66.
MAY 67 234P LONGINOW,A. I
PROJ: IITRI-M6101

UNCLASSIFIED REPORT

DESCRIPTORS: (*CIVIL DEFENSE SYSTEMS, *FALLOUT SHELTERS), RADIOACTIVE FALLOUT, NUCLEAR EXPLOSION DAMAGE, PROTECTION, DESIGN, UNDERGROUND EXPLOSIONS, COSTS, UNDERGROUND STRUCTURES, EFFECTIVENESS, BLAST, MAPS, ECONOMICS, CONSTRUCTION, TABLES (U)

THE EFFORT REPORTED HEREIN IS CONCERNED WITH CIVILIAN DUAL-USE PERSONNEL SHELTERS. ITS PRIMARY OBJECTIVES ARE: TO DETERMINE FOR NUCLEAR WEAPONS ENVIRONMENTS OTHER THAN FALLOUT RADIATION ALONE, THE EXTENT OF THE ECONOMIC ADVANTAGES OF DUAL-USE SHELTER SYSTEMS WITH RESPECT TO EXPECTED PERCENT OF POPULATION THUS SHELTERED. TO BRING INTO SHARPER FOCUS THOSE AREAS IN WHICH MORE RESEARCH OR ANALYSIS IS NECESSARY IN ORDER TO INCREASE THE EFFECTIVENESS OF THIS SHELTERING CONCEPT. TOPICS SUPPLEMENTARY TO THE ABOVE OBJECTIVES INCLUDE: ESTIMATED CONSTRUCTION TRENDS IN SELECTED TYPES OF CONSTRUCTION, A LIMITED STUDY ON THE USE OF EXPRESSWAY GRADE SEPARATIONS AS DUAL-USE SHELTERS, AND COST ESTIMATING AND COST REPORTING AS APPLIED TO DUAL-USE SHELTERS. RESULTS OF THIS EFFORT DEALING WITH A LARGE NUMBER OF EXISTING RELATED TOPICS ARE CONTAINED IN THIS REPORT. THESE RESULTS ARE IN THE FORM OF ASSEMBLED AND UPDATED COSTS AS WELL AS PHYSICAL AND ENVIRONMENTAL DATA AND CONCLUSIONS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-655 519 13/13 18/8 13/3 15/6
HUDSON INST INC HARMON-ON-HUDSON N Y
TIME-COMPRESSION POTENTIAL OF AN EMERGENCY BLAST SHELTER PROGRAM. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
MAY 67 94P BROWN,WILLIAM M. ;
CANDELA,BASIN ;CANDLIN,STANTON ;KURPKA,ROBERT A. ;PANERO,ROBERT ;
REPT. NO. HI-874-RR

UNCLASSIFIED REPORT

DESCRIPTORS: (*FALLOUT SHELTERS, *CONSTRUCTION MATERIALS), (*RADIOACTIVE FALLOUT, *CIVIL DEFENSE SYSTEMS), BLAST, SHOCK WAVES, TABLES, DESIGN, CONSTRUCTION, COSTS, DECISION MAKING, URBAN PLANNING, URBAN AREAS, NUCLEAR WARFARE, MOBILIZATION, MANAGEMENT PLANNING, TIME (U)

AN EXAMINATION IS MADE OF THE NATION'S POTENTIAL FOR VERY RAPID CONSTRUCTION OF AN URBAN BLAST SHELTER SYSTEM DURING SEVERE NUCLEAR CRISES, ASSUMING THE EXISTENCE OF THE NECESSARY PLANS AND PREPARATIONS FOR A MAJOR CIVIL DEFENSE MOBILIZATION INVOLVING NEARLY THE ENTIRE U. S. POPULATION. IT IS FOUND THAT THE MATERIAL AND LABOR RESOURCES OF THE U. S. SHOULD PERMIT AN AUSTERE SHELTER SYSTEM TO BE CONSTRUCTED WITHIN A FEW (I.E., 2-4) WEEKS. AUSTERITY IN THE ABOVE SENSE WOULD MEAN: (A) CROWDED SHELTERS (2-3 PEOPLE OCCUPYING A SPACE NORMALLY ALLOTTED FOR ONE); AND (B) DEFERRING TO A LATER TIME THE INSTALLATION OF ENTRANCES, VENTILATION, AND OTHER HABITABILITY ITEMS. THE TIME ESTIMATES ARE MADE ON TECHNICAL CONSIDERATIONS ALONE. IT IS ASSUMED THAT THE IMPORTANT PROBLEMS OF PLANNING, ORGANIZING, ADMINISTRATING, AND DECISION-MAKING WOULD NOT SIGNIFICANTLY DELAY THE PROGRAM. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-655 538 13/13
AMMANN AND WHITNEY NEW YORK
TEST AND EVALUATION OF COMPUTER ANALYSIS PROGRAMS FOR SHELTERS IN BUILDINGS. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
MAY 67 100P WEISSMAN,SAMUEL ;
DINAPOLI,PAT ;COHEN,EDWARD ;
CONTRACT: OCD-PS-65-72

UNCLASSIFIED REPORT

DESCRIPTORS: (•FALLOUT SHELTERS, •BUILDINGS), (•COMPUTER PROGRAMS, •CIVIL DEFENSE SYSTEMS), NUCLEAR WEAPONS, FACTOR ANALYSIS, BLAST, GAMMA RAYS, SHIELDING, CONSTRUCTION MATERIALS, COSTS, NUCLEAR EXPLOSION DAMAGE, FIRES (U)

THE REPORT PRESENTS THE RESULTS OF A PROJECT TO TEST AND EVALUATE FOUR COMPUTER PROGRAMS DEVELOPED BY THE OFFICE OF CIVIL DEFENSE, IN ORDER TO DETERMINE THEIR USEFULNESS IN ENGINEERING ANALYSIS OR REVIEW OF PROTECTIVE STRUCTURES FOR CIVIL-DEFENSE PURPOSES. THE PROGRAMS ARE (1) DYNAMIC RESPONSE OF HIGH-RISE BUILDINGS TO NUCLEAR BLAST LOADING-LINEAR DYNAMIC ANALYSIS, (2) DYNAMIC RESPONSE OF HIGH-RISE BUILDINGS TO NUCLEAR BLAST LOADINGS-NONLINEAR DYNAMIC ANALYSIS, (3) ANALYSIS OF STRUCTURES FOR FALLOUT GAMMA RADIATION SHIELDING, AND (4) REUSABILITY OF BUILDINGS AFTER A WARFIRE. TWO ACTUAL HIGH-RISE BUILDING DESIGNS, A REINFORCED-CONCRETE FRAME STRUCTURE AND A STRUCTURAL-STEEL FRAME STRUCTURE, WERE USED AS PROTOTYPES FOR THE EVALUATION. THE PROGRAMS WERE USED TO PERFORM ANALYSES TO DETERMINE NECESSARY STRUCTURAL MODIFICATIONS TO INCORPORATE BLAST AND FALLOUT PROTECTIVE DESIGN FEATURES IN THE ORIGINAL DESIGN OF EACH BUILDING FOR THE 2,5 AND 10 PSI OVERPRESSURE RANGES FOR A 10-MT NUCLEAR WEAPON. THE FIRE PROTECTIVE CAPABILITY OF THE BUILDINGS FOR EACH PROTECTIVE DESIGN WAS ALSO EVALUATED. STRUCTURAL MODIFICATIONS AND INCREMENTAL COST ARE PRESENTED IN THE FORM OF ENGINEERING CASE STUDIES. A COMPARISON OF COMPUTATIONAL COSTS FOR THE TEST BUILDINGS BY THE COMPUTER METHOD USED, WITH COSTS ESTIMATED ASSUMING THE ANALYSES WERE PERFORMED BY MANUAL METHODS IS PRESENTED. OTHER EVALUATIONS WERE MADE PERTAINING TO (1) INPUT FORMS AND COMPUTER OPERATION, (2) ECONOMIES OF DESIGN, (3) COMPLETENESS OF PROGRAMS, (4) FLEXIBILITY OF PROGRAMS, (5) USE OF THE PROGRAMS SEPARATELY. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-655 904 13/1 13/13
GENERAL AMERICAN TRANSPORTATION CORP NILES ILL GENERAL AMERICAN RESEARCH DIV
SHELTER LIGHTING KIT. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
JAN 67 95P NEVERIL,R. B. ;BEHLS,H. F. ;
REPT. NO. GARD-1400

UNCLASSIFIED REPORT

DESCRIPTORS: (*FALLOUT SHELTERS, *LIGHTING EQUIPMENT), (*CIVIL DEFENSE SYSTEMS, *POWER SUPPLIES), PERFORMANCE(ENGINEERING), COSTS, LIGHT TRANSMISSION, FLUORESCENCE, LUMINESCENCE, VOLTAGE (U)

THE SHELTER LIGHTING KIT INCLUDES A MANUALLY-DRIVEN POWER UNIT AND A FLUORESCENT LIGHTING SYSTEM. TWO POWER UNIT DESIGNS ARE PRESENTED FOR PREPRODUCTION FABRICATION AND EVALUATION. ONE POWER UNIT HAS A GENERATOR MOUNTED ON A BICYCLE-TYPE FRAME AND DRIVEN BY A CHAIN AND SPROCKET TRANSMISSION; WHILE THE OTHER UNIT HAS A GENERATOR WITH AN INTEGRAL GEARED TRANSMISSION MOUNTED ON A FOLDING TRIPOD FRAME. BOTH POWER UNITS ARE DESIGNED FOR ONE-MAN OPERATION WITH A POWER INPUT OF 0.1 HORSEPOWER AT A NOMINAL PEDAL SPEED OF 55 RPM AND A NOMINAL GENERATOR OUTPUT OF 50 WATTS AT 120 VOLTS AC. THE SELECTION OF EITHER DESIGN FOR THE PRODUCTION MODEL WILL DEPEND ON THEIR PERFORMANCE AND A COST ANALYSIS. THE FLUORESCENT LIGHTING SYSTEM CONSISTS OF TWO ADJUSTABLE LAMP FIXTURES AND TWO 20-WATT OR 25-WATT PREHEAT FLUORESCENT LAMPS OPERATED IN SERIES (SELECTED LAMP WATTAGE WILL DEPEND ON THE OVERALL SYSTEM EFFICIENCY). THE ESTIMATED PRODUCTION COST OF THE LIGHTING KIT IS $90. AN INCANDESCENT LIGHTING SYSTEM IS PROPOSED AS AN OPTIONAL ACCESSORY FOR NIGHT LIGHTING OR BACKGROUND ILLUMINATION IN MULTI-ROOM SHELTERS. THIS LIGHTING SYSTEM CONSISTS OF FIVE 10-WATT INCANDESCENT LAMPS WITH ADAPTER SOCKETS AND FIVE 50-FOOT EXTENSION CORDS. THE ESTIMATED COST OF THIS ACCESSORY IS $7.30. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-656 595 13/13
PENNSYLVANIA STATE UNIV UNIVERSITY PARK SHELTER RESEARCH AND STUDY PROGRAM
DESIGNING SHELTER IN NEW BUILDINGS, (U)
MAR 67 87P KNOTT,ALBERT I
MONITOR: OCD TR-43

UNCLASSIFIED REPORT

DESCRIPTORS: (*FALLOUT SHELTERS, DESIGN), BUILDINGS, SHIELDING, GAMMA RAYS, CONSTRUCTION MATERIALS, INSTRUCTION MANUALS, CIVIL DEFENSE SYSTEMS (U)

THE MANUAL DISCUSSES RADIATION SHIELDING AS IT APPLIES TO THE PRELIMINARY DESIGNING OF PROTECTION AGAINST FALLOUT GAMMA RADIATION IN NEW CONSTRUCTION. THE ARCHITECTURAL PRINCIPLES OF SHIELDING ARE DISCUSSED AT LENGTH AND DESIGNING EXAMPLES ARE GIVEN. PLANNING CHARTS ARE PRESENTED WHEREBY MATERIAL WEIGHTS CAN BE SELECTED ON A PRELIMINARY BASIS TO PROVIDE SHIELDING WHICH WILL SATISFY THE OFFICE OF CIVIL DEFENSE REQUIREMENTS FOR COMMUNITY SHELTERS. ENVIRONMENTAL CONTROL, SHELTER SUPPLY, AND MANAGEMENT FACTORS ARE NOT DISCUSSED AS THEY ARE AUXILIARY TO THE PROBLEM OF THE PROVISION OF RADIATION PROTECTION. IT IS ANTICIPATED THAT THE PRELIMINARY ARCHITECTURAL SCHEMES DEVELOPED THROUGH THE USE OF THIS MANUAL WILL BE VERIFIED BY SKILLED ANALYSTS BEFORE FINAL DESIGNS ARE COMPLETED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-656 625 13/13
BECHTEL CORP GAITHERSBURG MD
PROTECTIVE BLAST SHELTER SYSTEM ANALYSIS. (U)
DESCRIPTIVE NOTE: FINAL REPT.
APR 67 244P
CONTRACT: OCD-PS-66-10

UNCLASSIFIED REPORT

DESCRIPTORS: (*SHELTERS, SYSTEMS ENGINEERING), (*URBAN AREAS, SHELTERS), RHODE ISLAND, POPULATION, DISTRIBUTION, SITE SELECTION, HAZARDS, COSTS, CONSTRUCTION, ROADS, UNDERGROUND STRUCTURES, CIVIL DEFENSE SYSTEMS (U)

FEASIBILITY OF 25 PSI BLAST SHELTER SYSTEM FOR ENTIRE POPULATION OF PROVIDENCE, R. I. IS INVESTIGATED. FACTORS ANALYZED INCLUDE: PEAK POPULATION DISTRIBUTION; SITE AVAILABILITY AND OWNERSHIP; ACCESSIBILITY AND TRAVEL TIME; CHARACTERISTICS OF SITE AND SURROUNDING TERRAIN; POTENTIAL FLOODING, FIRE, AND DEBRIS HAZARD; AND POTENTIAL DUAL PURPOSE SHELTER APPLICATIONS. LEGAL FINANCIAL AND CONSTRUCTION PROBLEMS ARE DISCUSSED. MAPS AND TABLES DEFINE A NETWORK OF 46 SHELTERS CAPABLE OF LOADING TO CAPACITY WITHIN 30 MINUTES AFTER ALERT. COMPLETE COVERAGE OF POPULATED AREAS OF THE CITY IS AFFORDED BY A MAXIMUM 3/4 MILE WALKING RADIUS OF SHELTER. SINGLE PURPOSE SHELTERS COST AN ESTIMATED $204. PER PERSON. DUAL PURPOSE SHELTERS SUCH AS GARAGES, SCHOOLS AND OFFICES COULD REDUCE FEDERAL OUTLAY TO $147. PER PERSON. COST VARIATION OF SHELTER STRUCTURE AND SITE SENSITIVE FACTORS WITH CAPACITY ARE GRAPHICALLY PRESENTED. ADDITIONAL COST STUDIES COVER AUSTERE SHELTER WITH PACKAGED VENTILATION UNITS, COST OF UPGRADING EXISTING BELOW GROUND STRUCTURES, AND LIFE SUPPORT SYSTEMS. AN ADDENDUM DISCUSSES PROBLEMS OF CONSTRUCTING SHELTERS UNDER STREETS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-656 940 5/1 15/3 13/13
RESEARCH TRIANGLE INST DURHAM N C OPERATIONS RESEARCH AND ECONOMICS DIV
BUDGE ALLOCATION FOR SHELTER SYSTEMS. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
JUN 67 107P MCMULLAN,PHILIP S. ;
WRIGHT,JAMES C. ;ANDERSON,HELEN S. ;
TRUSTMAN,STANLEY ;
REPT. NO. RTI-OU-230-1

UNCLASSIFIED REPORT

DESCRIPTORS: (*FALLOUT SHELTERS, *BUDGETS), (*CIVIL DEFENSE SYSTEMS, BUDGETS), OPTIMIZATION, PROBABILITY, COST EFFECTIVENESS, MANAGEMENT PLANNING (U)

A COMPUTER MODEL WHICH PREPARES OPTIMUM CIVIL DEFENSE SHELTER POSTURES BUILT UPON THE BASE OF THE CURRENT NATIONAL FALLOUT SHELTER SURVEY IS DEVELOPED, PROGRAMMED, AND DEMONSTRATED. *OPTIMUM* CAN BE BASED ON THE USER-SPECIFIED OBJECTIVE OF EITHER MINIMUM FATALITIES OR MINIMUM CASUALTIES. THE USER DETERMINES THE LEVEL OF RISK BY SUPPLYING AN ATTACK ENVIRONMENT (BOTH BLAST AND FALLOUT) WHICH IS USED TO CALCULATE THE PROBABILITY OF FATALITY (OR CASUALTY) FOR A PERSON IN EACH EXISTING SHELTER AND IN EACH PROPOSED SHELTER OPTION IN EACH STANDARD LOCATION. POPULATION IS THEN ASSIGNED TO EXISTING AND PROPOSED SHELTER IN AN OPTIMUM MANNER, SUBJECT TO THE SPECIFIED BUDGET. THE MATHEMATICAL FORMULATION IS EQUIVALENT TO A LINEAR PROGRAM. THE MODEL ALSO PERMITS AN EVALUATION OF SHELTER IMPROVEMENT PROGRAMS AGAINST ANY USER SUPPLIED ATTACK ENVIRONMENT. AT THE OPTION OF THE USER, THE FOLLOWING INPUTS MAY BE VARIED: (A) BUDGET LEVEL, (B) DEGREE OF RISK OR HAZARD, (C) DEFINITION OF SHELTER FALLOUT OR BLAST VULNERABILITY, AND (D) COST PER SPACE OF SHELTER. THE MODEL WAS DEMONSTRATED USING THE STATE OF RHODE ISLAND. THE MODEL CAN BE USED PRIMARILY IN SYNTHESIS AND ANALYSIS OF ANEAR FUTURE* SHELTER SYSTEMS AND CAN BE MODIFIED FOR USE IN MORE COMPREHENSIVE SYSTEM STUDIES (E.G., COMBINED WARNING, MOVEMENT, AND SHELTER SYSTEM STUDIES) AND COST-EFFECTIVENESS EVALUATIONS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-668 898 15/3 5/1 5/9
OFFICE OF CIVIL DEFENSE WASHINGTON D C
SHELTER MANAGEMENT TEXTBOOK. (U)
JUL 67 121P
REPT. NO. SM-161

UNCLASSIFIED REPORT

DESCRIPTORS: (•FALLOUT SHELTERS, •MANAGEMENT ENGINEERING), (•CIVIL DEFENSE SYSTEMS, TRAINING), TEXTBOOKS, RADIOBIOLOGY, WEAPONS, SOCIOLOGY, POPULATION, ATMOSPHERE, TEMPERATURE CONTROL, WATER, SAFETY, FOOD, SLEEP, SANITARY ENGINEERING, MEDICINE, ILLUMINATION, POWER, COMMUNICATION SYSTEMS, TRAINING, PSYCHOLOGY, RELIGION, RECREATION (U)

CONTENTS: OVERVIEW OF SHELTER MANAGEMENT; RADIOLOGICAL PROTECTION; OTHER WEAPON EFFECTS; PRE-OCCUPANCY MANAGEMENT RESPONSIBILITIES; ORGANIZING THE SHELTER POPULATION; ORGANIZING SHELTER RESOURCES; ORGANIZING ACTIVITIES AND PATTERNS OF LIVING; ATMOSPHERE AND TEMPERATURE CONTROL; WATER; SAFETY; FOOD; SLEEP; SANITATION; MEDICAL CARE; ILLUMINATION AND POWER; COMMUNICATION; TRAINING; PSYCHOLOGICAL SUPPORT; RELIGIOUS, RECREATIONAL, AND SERVICE ACTIVITIES; POST-OCCUPANCY MANAGEMENT RESPONSIBILITIES. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-659 377 15/3
INSTITUTE FOR DEFENSE ANALYSES ARLINGTON VA ECONOMIC AND POLITICAL STUDIES DIV
AN OPTIMIZATION STUDY OF BLAST SHELTER DEPLOYMENT. VOLUME I. SUMMARY. (U)
SEP 66 102P MITCHELL,DAVID L. ;

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH LAMDA CORP.; ARLINGTON, VA. SEE ALSO VOLUME 2, AD-659 378.

DESCRIPTORS: (*FALLOUT SHELTERS, DEPLOYMENT), (*CIVIL DEFENSE SYSTEMS, OPTIMIZATION), NUCLEAR WARFARE, EFFECTIVENESS, VULNERABILITY, POPULATION, BUDGETS, NUCLEAR WARFARE CASUALTIES, DAMAGE, EXPLOSION EFFECTS, INDUSTRIES (U)

THE STUDY EXAMINES METHODS OF DETERMINING BLAST SHELTER DEPLOYMENTS AND OF ASSESSING THEIR PERFORMANCE FOR A VARIETY OF NUCLEAR ATTACKS. THE GOAL IS NOT TO SEEK A SINGLE OPTIMAL DEPLOYMENT, WHICH GENERALLY REQUIRES MAKING ARBITRARY ASSUMPTIONS ON THE NATURE AND SIZE OF THE ATTACK, THUS OVERLOOKING THE ATTACKER'S FREEDOM OF CHOICE AFTER A BLAST SHELTER PROGRAM HAS BEEN DEPLOYED. RATHER, THE STUDY SEEKS 'STABILIZED' DEPLOYMENTS WHICH PROTECT POPULATION ALMOST AS WELL AS AN OPTIMAL DEPLOYMENT, EVEN THOUGH IT IS NOT TRULY OPTIMAL FOR ANY SPECIFIED ATTACK. THE STUDY EXAMINES THE ATTACKER'S FREEDOM TO VARY FORCE LEVEL, TIME OF ATTACK, ATTACK OBJECTIVE, HEIGHT OF BURST, AND TARGETING. A QUITE GENERAL AND FLEXIBLE COMPUTER MODEL BLAST, BASED ON GENERALIZED LAGRANGE MULTIPLIERS, GENERATES SHELTER DEPLOYMENTS FOR THE U. S. AND COMPUTES THEIR EFFECTIVENESS AGAINST ATTACKS IN WHICH THESE FACTORS ARE VARIED. IN BLAST THE NATION IS CONSIDERED AS A COLLECTION OF CELLS TWO NAUTICAL MILES SQUARE, PROVIDING A DETAILED ANALYSIS OF THE OFFENSE/DEFENSE INTERACTION. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-659 378 15/3
INSTITUTE FOR DEFENSE ANALYSES ARLINGTON VA ECONOMIC AND POLITICAL STUDIES DIV
AN OPTIMIZATION STUDY OF BLAST SHELTER DEPLOYMENT. VOLUME II. APPENDICES A-G. (U)
SEP 66 102P MITCHELL,DAVID L. ; BENSON,LOREN A. ;GALIANO,ROBERT J. ;

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE; PREPARED IN COOPERATION WITH LAMBDA CORP., ARLINGTON, VA. SEE ALSO VOLUME 1, AD-659 377 AND VOLUME 3, AD-659 379.

DESCRIPTORS: (*FALLOUT SHELTERS, DEPLOYMENT), (*CIVIL DEFENSE SYSTEMS, OPTIMIZATION), NUCLEAR WARFARE, EFFECTIVENESS, VULNERABILITY, POPULATION, BUDGETS, NUCLEAR WARFARE CASUALTIES, DAMAGE, EXPLOSION EFFECTS, INDUSTRIES, MATHEMATICAL MODELS (U)

CONTENTS: ADDITIONAL LAGRANGE MULTIPLIER THEORY; A CITY TARGETING MODEL UTILIZING SIMULTANEOUS WEAPON LAYDOWNS; AN ANALYTICAL MODEL FOR BLAST SHELTER DEPLOYMENT; POPULATION AND INDUSTRY DISTRIBUTION; SUGGESTED ADDITIONAL STUDY; PARAMETERS FOR CURVES; HOUSTON AND APRIL SHELTER DATA. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-659 379 15/3
INSTITUTE FOR DEFENSE ANALYSES ARLINGTON VA ECONOMIC AND POLITICAL STUDIES DIV
AN OPTIMIZATION STUDY OF BLAST SHELTER DEPLOYMENT. VOLUME III. APPENDIX H- BLAST - THE COMPUTER PROGRAM. (U)
SEP 66 144P MITCHELL,DAVID L. !

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH LAMBDA CORP., ARLINGTON, VA. SEE ALSO VOLUME 2, AD-660 378.

DESCRIPTORS: (*FALLOUT SHELTERS, DEPLOYMENT), (*CIVIL DEFENSE SYSTEMS, OPTIMIZATION), NUCLEAR WARFARE, EFFECTIVENESS, VULNERABILITY, POPULATION, BUDGETS, NUCLEAR WARFARE CASUALTIES, DAMAGE, EXPLOSION EFFECTS, INDUSTRIES, COMPUTER PROGRAMS (U)

THE FIRST FUNCTION OF THE PROGRAM IS TO GENERATE A BLAST SHELTER DEFENSE POSTURE OF A SPECIFIED COST LEVEL FOR WHATEVER POPULATION DATA IS SUPPLIED, AND THEN TO CALCULATE THE FATALITIES WHICH THAT POSTURE PERMITS FOR A RANGE OF ATTACK LEVELS. THE SECOND FUNCTION OF THE PROGRAM IS TO COMPUTE, FOR ANY COST LEVEL SPECIFIED, UPPER AND LOWER BOUNDS FOR THE OPTIMUM DEFENSE PERFORMANCE AT EACH ATTACK LEVEL - THE BOUNDING PROCEDURE. THE THIRD FUNCTION IS TO EVALUATE INDEPENDENTLY THE CELL MODEL BY COMPARING RESULTS USING THE CELL MODEL WITH RESULTS USING A SEPARATE LAYDOWN METHOD - THE TARGETING MODEL. SINCE THE TARGETING MODEL IS USED QUITE SEPARATELY FROM THE REST OF THE PROGRAM, THAT PORTION OF THE PROGRAM IS DISCUSSED IN APPENDIX B. THE PROGRAM ITSELF HAS THE SAME THREE DIVISIONS WITH A DRIVER PROGRAM WHICH CONTROLS THE SELECTION OF THE PROGRAM TO BE RUN. IF THE DRIVER DATA IS READ IN, PARAMETERS ARE SET, AND THEN THE PORTION OF THE PROGRAM CONTAINING THE DESIRED PROGRAM (CALLED AN OVERLAY, IS READ IN. THE DESIRED PROGRAM IS EXECUTED USING SUBROUTINES IN THE MAIN PORTION OF THE PROGRAM PLUS THE PROPER OVERLAY. THE NEXT THREE SECTIONS DESCRIBE HOW TO USE THE PROGRAM IN DETAIL. THE FIRST DESCRIBES THE OPTIONS AND PARAMETERS TO BE SET, THE SECOND GIVES SAMPLE DATA DECKS FOR THE DIFFERENT RUNS AND THE DATA SEQUENCES FOR ALL POSSIBLE TYPES OF RUNS, AND THE THIRD DESCRIBES THE OPERATIONS OF THE SUBROUTINES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-659 800 13/2 13/13 14/1
STANFORD RESEARCH INST MENLO PARK CALIF
SHELTER WATER SUPPLY STUDY; COST IMPLICATIONS OF EMERGENCY SOURCES. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
AUG 67 186P JENSEN,GORDON F. ;
CONTRACT: DAHC20-67-C-0136
PROJ: SRI-MU-6300-170

UNCLASSIFIED REPORT

DESCRIPTORS: (*FALLOUT SHELTERS, *CIVIL DEFENSE SYSTEMS), (*WATER SUPPLIES, SOURCES), COSTS, WATER TANKS, WATER WELLS, TANKS(CONTAINERS), COST EFFECTIVENESS, RADIOACTIVE FALLOUT, SURVIVAL (U)

THE STUDY COMPARES SELECTED ALTERNATIVE METHODS OF SUPPLYING EMERGENCY DRINKING WATER TO INHABITANTS OF FALLOUT SHELTERS. THE RESPECTIVE COSTS AND SOME OF THE QUALITATIVE CONSIDERATIONS OF EACH SYSTEM WERE INVESTIGATED, WITH PARTICULAR EMPHASIS ON COMPARISONS OF MUNICIPAL SYSTEMS, TRAPPED WATER, WATER CONTAINERS, TANKS, AND WELLS. THIS STUDY REPORTS ON THE TRADEOFFS BETWEEN COST, SHELTER SIZE, AND WELL DEPTH OF EMERGENCY WATER SOURCES. THE TRADEOFFS ARE INVESTIGATED BY A SERIES OF COST-SENSITIVITY CURVES. THE CAPABILITIES AND DETAILS OF THE MUNICIPAL WATER SOURCES FOR TWO SAMPLE CITIES ARE ALSO REPORTED. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD=661 063 15/3 5/11
PITTSBURGH UNIV PA DEPT OF SOCIOLOGY
HOME SHELTER SURVEYS: PATTERNS OF ACCEPTANCE, (U)
AUG 67 98P NEHNEVAJSA,JIRI
CONTRACT: DAHC20-67-C-0122, NSF-GI1300

UNCLASSIFIED REPORT

DESCRIPTORS: (*FALLOUT SHELTERS, PUBLIC OPINION), CIVIL DEFENSE SYSTEMS, POPULATION, QUESTIONNAIRES, ACCEPTABILITY, ATTITUDES, STATISTICAL ANALYSIS (U)

THE REPORT ELABORATES RESPONSES OF 1471 NATIONALLY SAMPLED AMERICANS TO AN ITEM PROBING THE DESIRABILITY OF HOME SHELTER SURVEYS BY DEMOGRAPHIC, SOCIO-CULTURAL AND EXPECTED ATTITUDINAL CHARACTERISTICS. THE DATA ARE DRAWN FROM THE 1966 FIELD STUDY. IN THIS MANNER, THE PERSPECTIVES REGARDING HOME SHELTER SURVEYS ARE EVALUATED BY 135 DEMOGRAPHIC AND 110 ATTITUDINAL SUBGROUPS OF OUR POPULATION. THE FINDINGS INDICATE THAT THE HOME SHELTER SURVEY CONCEPT IS QUITE ACCEPTABLE TO THE NATION. UNFAVORABLE EXPRESSIONS OCCUR IN LOW FREQUENCIES AND ONLY SIX OF ALL THE SUBGROUPS CONSIDERED ACTUALLY YIELD A NEGATIVE DESIRABILITY AVERAGE IN RELATION TO THE QUESTION. OF THESE SUBGROUPS, IN FACT, THREE REPRESENT AMERICANS WHO ARE IN VARYING DEGREES OPPOSED TO CIVIL DEFENSE AS A WHOLE. BY AND LARGE, AND WITHIN THE OVERALL PATTERN OF FAVORABLENESS, THE ATTITUDINAL VARIABLES DIFFERENTIATE AMONG THE RESPONDENT SUBGROUPS MORE THAN DO DEMOGRAPHIC CHARACTERISTICS. IN VIEW OF THE FACT THAT POSITIVE ASSESSMENTS ACTUALLY EXCEED TWO-THIRDS OF THE RESPONDENTS AND THE CONCEPT IS NOT TYPICAL OF SPECIFIC SEGMENTS OF OUR POPULATION, WE CONCLUDE THAT SOMETHING OF A NATIONAL CONSENSUS PREVAILS WITH REGARD TO THE DESIRABILITY OF HOME SHELTER SURVEYS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-661 314 5/1 5/9 15/3
AMERICAN INSTITUTES FOR RESEARCH PITTSBURGH PA SOCIAL SYSTEMS PROGRAM
THE SHELTER MANAGEMENT CONTINGENCY GAME: I. DEVELOPMENT AND INITIAL EVALUATION OF A TRAINING VERSION. (U)
DESCRIPTIVE NOTE: FINAL REPT. MAY 66-APR 67,
APR 67 399P HALE,JOHN F. ;BEND,EMIL ;
JEFFREYS,FRANK B. ;
REPT. NO. AIR-F-13-4/67-FR

UNCLASSIFIED REPORT

DESCRIPTORS: (*FALLOUT SHELTERS, *MANAGEMENT ENGINEERING), (*TRAINING DEVICES, GAME THEORY), FEASIBILITY STUDIES, INSTRUCTORS, CIVIL DEFENSE PERSONNEL, SOCIAL PSYCHOLOGY, CONFINED ENVIRONMENTS, VENTILATION (U)

THE PURPOSE OF THE WORK WAS THE FURTHER DEVELOPMENT OF A SHELTER MANAGEMENT CONTINGENCY GAME. THE GOAL WAS TO DEMONSTRATE THE FEASIBILITY OF THE GAME AS A TRAINING DEVICE, AND SO THE MAIN EMPHASIS IN THE WORK CONSISTED OF THE PRODUCTION AND TESTING OF A VERSION OF THE GAME WHICH COULD BE USED IN SHELTER MANAGEMENT TRAINING COURSES. THE GAME, AS DEVELOPED, CAN BE PLAYED BY THE INDIVIDUAL STUDENT WITHOUT THE NECESSITY OF SUPERVISION BY THE INSTRUCTOR. RECORD-KEEPING PROCEDURES WERE ESTABLISHED SO THAT THE STUDENT'S PLAY CAN BE REVIEWED AND CRITIQUED BY THE INSTRUCTOR UPON CONCLUSION OF THE GAME. THE GAME WAS TESTED BY MEMBERS OF THE AMERICAN INSTITUTES FOR RESEARCH (AIR) RESEARCH STAFF, AND THE RESULTS OF THESE TEST PLAYS ARE REPORTED. IN ADDITION, COPIES OF THE GAME WERE SENT TO OFFICE OF CIVIL DEFENSE FIELD TRAINING PERSONNEL FOR REVIEW AND COMMENT. IN GENERAL, THE GAME APPEARS TO HOLD PROMISE AS A USEFUL TRAINING DEVICE. DIRECTIONS FOR FURTHER DEVELOPMENT OF THE GAME, PARTICULARLY AS A RESEARCH TOOL, WERE DISCUSSED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-662 616 15/3 13/13
PITTSBURGH UNIV PA DEPT OF SOCIOLOGY
ORIENTATIONS TOWARD COMMUNITY AND PRIVATE SHELTER SYSTEMS. (U)
AUG 67 62P MAST,ROBERT H. ;
CONTRACT: DAHC20-67-C-0122

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON PROJ. VIEWS ABOUT CIVIL DEFENSE ISSUES.

DESCRIPTORS: (*FALLOUT SHELTERS, PUBLIC OPINION); (*RADIOACTIVE FALLOUT, *SHELTERS), CIVIL DEFENSE SYSTEMS, PROTECTION, SOCIOLOGY, ENVIRONMENT, PROFESSIONAL PERSONNEL, ATTITUDES, ACCEPTABILITY, DECISION MAKING (U)

THE PAPER INVESTIGATES THE AMERICAN PUBLIC'S PATTERNS OF FAVORABILITY TOWARD COMMUNITY FALLOUT SHELTERS AND THE PATTERNS OF PREFERENCE FOR COMMUNITY OR PRIVATE SHELTERS. NATIONAL OPINION STUDIES BETWEEN 1960 AND 1966 REVEALED OVERWHELMING SUPPORT FOR THE IDEA OF COMMUNITY SHELTERS. NATIONAL STUDIES BETWEEN 1961 AND 1963 SHOWED ABOUT HALF OF THE PUBLIC PREFERRING COMMUNITY SHELTERS WHILE 30 TO 40 PER CENT PREFERRED PRIVATE SHELTERS. IN GENERAL, THOSE OPPOSED TO CIVIL DEFENSE ARE OPPOSED TO ITS SPECIFIC PROGRAMS. THOSE GROUPS FAVORING THE IDEA OF COMMUNITY SHELTERS WHILE PREFERRING PRIVATE WERE MORE LIKELY TO BE STRONGLY ORIENTED TO THE FAMILY GROUP. THOSE OPPOSING THE IDEA OF COMMUNITY SHELTERS BUT PREFERRING THEM OVER PRIVATE SHELTERS FOR PROTECTION WERE MORE LIKELY TO BE THE SOCIALLY UNATTACHED AND THE UNPROTECTED. MEN, MORE THAN WOMEN, TEND TO OPPOSE THE IDEA OF COMMUNITY SHELTERS WHILE PREFERRING PRIVATE SHELTERS FOR PROTECTION. WOMEN, MORE THAN MEN, TEND TO FAVOR COMMUNITY SHELTERS AND ALSO PREFER THEM FOR PROTECTION. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTRO_ NO. /BML27

AD-662 724 5/1 15/3 5/10
AMERICAN INSTITUTES FOR RESEARCH PITTSBURGH PA INST FOR PERFORMANCE TECHNOLOGY
TWO SIMULATION TECHNIQUES FOR FALLOUT SHELTER RESEARCH: THEIR PROPERTIES AND AN APPLICATION TO EVALUATING SHELTER MANAGEMENT GUIDANCE. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
SEP 67 133P MEAGLEY,DONALD E. ;
SMITH,ROBERT W. ;DUEKER,RICHARD L. ;
REPT. NO. AIR-D93A-9/67-FR

UNCLASSIFIED REPORT

DESCRIPTORS: (*CIVIL DEFENSE SYSTEMS, MANAGEMENT ENGINEERING), (*FALLOUT SHELTERS, MANAGEMENT ENGINEERING), LEADERSHIP, CONFINED ENVIRONMENTS, BEHAVIOR, MOTIVATION, SURVIVAL, INSTRUCTION MANUALS, STRESS(PSYCHOLOGY) (U)

TWO METHODS FOR SIMULATING IN SUBJECTS THE *SURVIVAL SET* TO BE EXPECTED IN SHELTERS WERE DEVELOPED, AND THEIR EFFECTIVENESS WAS TESTED. SECOND, THE EFFECTIVENESS OF TWO TYPES OF SHELTER MANAGEMENT GUIDANCE IN SMALL SHELTERS WITH EMERGENT MANAGEMENT WERE EVALUATED. THE TWO *SURVIVAL SET* SIMULATION TECHNIQUES DEVELOPED WERE ENVIRONMENTAL THREAT AND INTERNAL STRESS. UNDER ENVIRONMENTAL THREAT, SUBJECTS WERE CONFINED IN AN AIR-FILLED TANK, SUBMERGED 20 FEET IN WATER. HERE THE THREAT OF THE SURROUNDING WATER SUBSTITUTED FOR THE THREAT OF RADIATION. INTERNAL STRESS WAS CONDUCTED IN NORMAL ROOM CONFIGURATION. HERE, THREAT OF PAY REDUCTION FOR INADEQUATE PERFORMANCE OF SHELTER FUNCTIONS SERVED AS A SUBSTITUTE MOTIVATION FOR THREAT OF DEATH OR INJURY. THE TWO TECHNIQUES PRODUCED DIFFERING KINDS OF REALISM. WHILE INTERNAL STRESS SUBJECTS DEMONSTRATED GREAT VIGOR AND INITIATIVE IN PERFORMING SURVIVAL FUNCTIONS, ENVIRONMENTAL THREAT SUBJECTS EXHIBITED COMPARATIVELY HIGH TENSION LEVELS AND ATTENTIVENESS TO GUIDANCE. THE ADVANTAGES OF EACH TECHNIQUE ARE DISCUSSED, AND SUGGESTIONS FOR OTHER APPLICATIONS ARE MADE. THE TWO TYPES OF GUIDANCE COMPARED WERE AN EXTENSIVE, 200-PAGE HANDBOOK (FULL GUIDANCE) AND A LARGE, FOLDED SINGLE SHEET WHICH TERSELY OUTLINED ESSENTIAL MANAGEMENT PROCEDURES (ABBREVIATED GUIDANCE). THE LATTER WAS BASED ON THE LARGER DOCUMENT. THERE WAS A GENERALLY UNANIMOUS TENDENCY TO SHOW THAT THE ABBREVIATED GUIDANCE WAS SUPERIOR ACROSS ALL VARIABLES. IT WAS POINTED OUT THAT THESE RESULTS APPLY ONLY TO SMALL SHELTERS UNDER EMERGENT MANAGEMENT. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-663 483 15/3
DEPARTMENT OF THE ARMY WASHINGTON D C
CIVIL DEFENSE: A BIBLIOGRAPHY SURVEY 1960-67. (U)
DEC 67 123P
REPT. NO. DA-PAM-500-3

UNCLASSIFIED REPORT

DESCRIPTORS: (*CIVIL DEFENSE SYSTEMS, BIBLIOGRAPHIES), NUCLEAR WARFARE, NATIONAL DEFENSE, DEFENSE SYSTEMS, ARMS CONTROL, DISARMAMENT, ATTITUDES, SYMPOSIA, UNITED STATES GOVERNMENT, URBAN AREAS, MANPOWER, MANAGEMENT PLANNING, DISASTERS, CIVIL DEFENSE PERSONNEL, PUBLIC OPINION, FALLOUT SHELTERS, SURVIVAL (U)

A BIBLIOGRAPHIC SURVEY IS PRESENTED OF THE FOLLOWING CATEGORIES: (1) THE MENACE OF NUCLEAR WAR AND STRATEGIES FOR NATIONAL DEFENSE; (2) CIVIL DEFENSE AND THE AMERICAN PEOPLE; (3) CONGRESS AND CIVIL DEFENSE; (4) IMPLEMENTING AND ADMINISTERING CIVIL DEFENSE (CIVIL DEFENSE PLANS, PROGRAMS, AND OPERATIONS; FALLOUT AND THE PUBLIC--THE SHELTER PROGRAM; PREATTACK PLANNING FOR SURVIVAL AND POSTATTACK RECOVERY); (5) CIVIL DEFENSE IN FOREIGN COUNTRIES; (6) SOURCES FOR REFERENCE AND FURTHER STUDY. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-663 832 5/11 15/3 15/6
IOWA STATE UNIV AMES DEPT OF SOCIOLOGY AND ANTHROPOLOGY
FACTORS RELATED TO ADOPTION PROGRESS. A 1966 NATIONAL STUDY OF PUBLIC FALLOUT SHELTER ADOPTION. (U)
DESCRIPTIVE NOTE: SUMMARY REPT.,
AUG 67 80P KLONGLAN,GERALD E. ;
BEAL,GEORGE M. ;BOHLEN,JOE M. ;COWARD,E.
WALTER , JR;
REPT. NO. RURAL SOCIOLOGY-645
CONTRACT: DAHC20-67-C-0123

UNCLASSIFIED REPORT

DESCRIPTORS: (*FALLOUT SHELTERS, *PUBLIC OPINION), QUESTIONNAIRES, NUCLEAR WARFARE, SURVIVAL, ATTITUDES, CIVIL DEFENSE SYSTEMS, COLD WAR, PERCEPTION(PSYCHOLOGY), SOCIAL PSYCHOLOGY, ACCEPTABILITY, SOCIAL COMMUNICATION (U)

THE STUDY USES CONCEPTS RELATED TO ADOPTION AND DIFFUSION PROCESSES TO ANALYZE THE PUBLIC'S PROGRESS IN ADOPTING THE IDEA OF USING PUBLIC FALLOUT SHELTERS IN THE EVENT OF A NUCLEAR ATTACK. THE ANALYSIS IS BASED ON DATA COLLECTED IN THE 1966 OCD NATIONAL SURVEY OF 1497 RESPONDENTS. RESPONDENTS ARE ASSIGNED TO ONE OF FIVE ADOPTION STAGES: 21% OF THE RESPONDENTS WERE UNAWARE OF THE EXISTENCE OF PUBLIC FALLOUT SHELTERS (UNAWARE STAGE); 20% WERE AWARE OF PUBLIC FALLOUT SHELTERS BUT HAD NO ADDITIONAL INFORMATION ABOUT THEM (AWARE STAGE); 24% WERE AWARE OF AND HAD ADDITIONAL INFORMATION BUT HAD NOT THOUGHT ABOUT USING PUBLIC FALLOUT SHELTERS (INFORMATION STAGE); 19% WERE AWARE OF, HAD ADDITIONAL INFORMATION, HAD THOUGHT ABOUT, BUT HAD NOT DECIDED TO GO OR NOT GO TO A PUBLIC FALLOUT SHELTER (EVALUATION STAGE); AND 16% WERE AWARE OF, HAD ADDITIONAL INFORMATION, HAD THOUGHT ABOUT AND HAD DECIDED TO GO TO A PUBLIC FALLOUT SHELTER IN THE EVENT OF A NUCLEAR ATTACK (ADOPTION STAGE). THE STUDY ALSO ANALYZES THE RELATIONSHIPS BETWEEN STAGE OF ADOPTION AND THE FOLLOWING FACTORS: (1) PERSONAL ATTRIBUTES, (2) PERCEPTIONS OF THREAT, (3) PERCEPTIONS OF CIVIL DEFENSE, (4) PERCEPTIONS OF FALLOUT SHELTERS AND (5) SOURCES OF INFORMATION. NUMEROUS STATISTICALLY SIGNIFICANT RELATIONSHIPS WERE FOUND BETWEEN THESE FACTORS AND STAGE OF ADOPTION. FINDINGS ARE COMPARED WITH FINDINGS FROM THE 1964 OCD NATIONAL SURVEY. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-664 171 13/4 13/2 13/13
GENERAL AMERICAN TRANSPORTATION CORP NILES ILL GENERAL AMERICAN RESEARCH DIV
DUAL-PURPOSE WATER CONTAINER. (U)
DESCRIPTIVE NOTE: FINAL REPT. APR 66-JUN 67,
JUN 67 74P KAPIL,A. L. ;
REPT. NO. GARD-1404-F
PROJ: 14338

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: RESEARCH SUPPORTED IN PART BY OFFICE OF CIVIL DEFENSE, WASHINGTON, D. C. PREPARED IN COOPERATION WITH STANFORD RESEARCH INST., MENLO PARK, CALIF.

DESCRIPTORS: (*WATER TANKS, DESIGN), (*WATER SUPPLIES, FALLOUT SHELTERS), (*TOILET FACILITIES, CONTAINERS), STORAGE TANKS, POLYETHYLENE PLASTICS, CIVIL DEFENSE SYSTEMS, LIFE EXPECTANCY, MECHANICAL PROPERTIES, WASTES(SANITARY ENGINEERING) (U)

A 14-GALLON, DUAL-PURPOSE POLYETHYLENE CONTAINER WAS DEVELOPED FOR STORING WATER IN FALLOUT SHELTERS. AFTER THE WATER IS CONSUMED, THE CONTAINER CAN BE CONVERTED INTO A COMMODE. TESTS ON PROTOTYPE CONTAINERS SHOW THE DESIGN TO BE SATISFACTORY. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-664 183 5/11 15/3
IOWA STATE UNIV AMES DEPT OF SOCIOLOGY AND ANTHROPOLOGY
FACTORS RELATED TO ADOPTION PROGRESS. A 1966 NATIONAL STUDY OF PUBLIC FALLOUT SHELTER ADOPTION. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
AUG 67 420P KLONGLAN,GERALD E. ; BEAL,GEORGE M. ;BOHLEN,JOE M. ;COWARD,E. WALTER , JR;
REPT. NO. RURAL SOCIOLOGY-64
CONTRACT: DAHC20-67-C-0123

UNCLASSIFIED REPORT

DESCRIPTORS: (*FALLOUT SHELTERS, PUBLIC OPINION), ACCEPTABILITY, ATTITUDES, QUESTIONNAIRES, SOCIOLOGY, CIVIL DEFENSE SYSTEMS, STATISTICAL ANALYSIS, PERCEPTION(PSYCHOLOGY), COLD WAR, FOREIGN POLICY, LIMITED WAR, COMMUNISTS, SURVIVAL, DISARMAMENT, NATIONAL DEFENSE, NUCLEAR WARFARE, THREAT EVALUATION (U)

THE STUDY USES CONCEPTS RELATED TO ADOPTION AND DIFFUSION PROCESSES TO ANALYZE THE PUBLICAS PROGRESS IN ADOPTING THE IDEA OF USING PUBLIC FALLOUT SHELTERS IN THE EVENT OF A NUCLEAR ATTACK. THE ANALYSIS IS BASED ON DATA COLLECTED IN THE 1966 OCD NATIONAL SURVEY OF 1497 RESPONDENTS. RESPONDENTS ARE ASSIGNED TO ONE OF FIVE ADOPTION STAGES; 21% OF THE RESPONDENTS WERE UNAWARE OF THE EXISTENCE OF PUBLIC FALLOUT SHELTERS (UNAWARE STAGE); 20% WERE AWARE OF PUBLIC FALLOUT SHELTERS BUT HAD NO ADDITIONAL INFORMATION ABOUT THEM (AWARE STAGE); 24% WERE AWARE OF AND HAD ADDITIONAL INFORMATION BUT HAD NOT THOUGHT ABOUT USING PUBLIC FALLOUT SHELTERS (INFORMATION STAGE); 19% WERE AWARE OF, HAD ADDITIONAL INFORMATION, HAD THOUGHT ABOUT, BUT HAD NOT DECIDED TO GO OR NOT GO TO A PUBLIC FALLOUT SHELTER (EVALUATION STAGE); AND .6% WERE AWARE OF, HAD ADDITIONAL INFORMATION, HAD THOUGHT ABOUT AND HAD DECIDED TO GO TO A PUBLIC FALLOUT SHELTER IN THE EVENT OF A NUCLEAR ATTACK (ADOPTION STAGE). THE STUDY ALSO ANALYZES THE RELATIONSHIPS BETWEEN STAGE OF ADOPTION AND THE FOLLOWING FACTORS: (1) PERSONAL ATTRIBUTES, (2) PERCEPTIONS OF THREAT, (3) PERCEPTIONS OF CIVIL DEFENSE, (4) PERCEPTIONS OF FALLOUT SHELTERS AND (5) SOURCES OF INFORMATION. NUMEROUS STATISTICALLY SIGNIFICANT RELATIONSHIPS WERE FOUND BETWEEN THESE FACTORS AND STAGE. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BHL27

AD-664 439 13/13 18/6 18/8
OFFICE OF CIVIL DEFENSE WASHINGTON D C
FALLOUT SHELTERS. (U)
DEC 67 8P
REPT. NO. OCD-TR-39

UNCLASSIFIED REPORT

DESCRIPTORS: (*FALLOUT SHELTERS, DESIGN), NUCLEAR RADIATION, SHIELDING, RADIOACTIVE FALLOUT, RADIATION EFFECTS, NUCLEAR EXPLOSION DAMAGE, BLAST, CIVIL DEFENSE SYSTEMS, BUILDINGS, SPECIFICATIONS, VENTILATION, CONSTRUCTION, DOSAGE, AIRBURST, SURFACE BURST (U)
IDENTIFIERS: YIELD, FIREBALL(NUCLEAR BURST) (U)

THE PURPOSE OF THE REPORT IS TO PROVIDE TECHNICAL INFORMATION AND REFERENCES FOR THE CONVENIENCE OF DESIGN PROFESSIONALS. THIS INFORMATION IS SUPPLEMENTED BY PUBLICATIONS AND BY THE ARCHITECTURAL AND ENGINEERING SERVICES WHICH ARE DESCRIBED. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-664 477 13/13 15/3
OFFICE OF CIVIL DEFENSE WASHINGTON D C
MINIMUM TECHNICAL REQUIREMENTS FOR FAMILY SHELTERS. (U)
DESCRIPTIVE NOTE: TECHNICAL MEMO.
AUG 62 5P
REPT. NO. OCD-TM-61-1

UNCLASSIFIED REPORT

DESCRIPTORS: (*FALLOUT SHELTERS, SPECIFICATIONS), CIVIL DEFENSE SYSTEMS, BLAST, PROTECTION, VENTILATION, CONSTRUCTION, FIRE SAFETY, FIRE RESISTANT MATERIALS, SHIELDING, NUCLEAR RADIATION, GAMMA RAYS, RADIOACTIVE FALLOUT, WATER SUPPLIES, SANITARY ENGINEERING, DESIGN (U)

THE PURPOSE OF THESE MINIMUM TECHNICAL REQUIREMENTS IS TO ESTABLISH OFFICIAL STANDARDS WHICH WILL PROVIDE THE BASIS FOR EFFECTIVE FAMILY SHELTER DESIGNS. MINOR MODIFICATIONS TO SUIT LOCAL BUILDING CODES MAY BE NECESSARY. HOWEVER, CARE MUST BE TAKEN NOT TO DIMINISH THE PROTECTIVE CHARACTERISTICS OF THE SHELTER. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-664 478 13/13 15/3
OFFICE OF CIVIL DEFENSE WASHINGTON D C
FALLOUT SHELTER SURVEYS; GUIDE FOR ARCHITECTS AND ENGINEERS. (U)
DESCRIPTIVE NOTE: NATIONAL PLAN APPENDIX SERIES.
MAY 60 54P
REPT. NO. OCD-NP-10-2

UNCLASSIFIED REPORT

DESCRIPTORS: (*FALLOUT SHELTERS, STANDARDS), BUILDINGS, RADIOACTIVE FALLOUT, GAMMA RAYS, SHIELDING, ROOFS, VENTILATION, WATER SUPPLIES, SANITARY ENGINEERING, SPECIFICATIONS, POWER SUPPLIES, HAZARDS, SURVIVAL, URBAN AREAS, CIVIL DEFENSE SYSTEMS, STRUCTURES, UNDERGROUND STRUCTURES (U)
IDENTIFIERS: HABITABILITY (U)

THE PURPOSE OF THIS GUIDE IS TO PROVIDE ARCHITECTS AND ENGINEERS WITH PROCEDURES AND STANDARDS FOR (1) EVALUATING THE FALLOUT SHELTER POTENTIAL OF EXISTING STRUCTURES, AND (2) MODIFYING STRUCTURES FROM THE STANDPOINT OF RADIATION SHIELDING AND HABITABILITY TO IMPROVE THEIR WORTH AS FALLOUT SHELTERS. THESE SAME PROCEDURES AND STANDARDS MAY BE USED FOR PRELIMINARY DESIGN TO INCORPORATE SHELTER INTO NEW STRUCTURES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-664 479 18/3 13/13
OFFICE OF CIVIL DEFENSE WASHINGTON D C
CIVIL ENGINEERING IN A NUCLEAR ENVIRONMENT. (U)
JUN 64 70P
REPT. NO. TR-26

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED FOR PRESENTATION AT ENVIRONMENTAL ENGINEERING CONFERENCE, ATLANTA, GA., 26 FEB 63.

DESCRIPTORS: (*NUCLEAR EXPLOSIONS, FALLOUT SHELTERS), (*STRUCTURES, DESIGN), CIVIL ENGINEERING, NUCLEAR WEAPONS, BLAST, THERMAL RADIATION, CIVIL DEFENSE SYSTEMS, UNDERGROUND STRUCTURES, NUCLEAR EXPLOSION DAMAGE, FOUNDATIONS(STRUCTURES), SYMPOSIA, BUILDINGS, VULNERABILITY, NUCLEAR WARFARE, ENVIRONMENTAL TESTS, RADIOACTIVE FALLOUT, FIRE RESISTANT MATERIALS (U)

CONTENTS: ENGINEERING IN A BLAST ENVIRONMENT - DESIGN OF SIMPLE STRUCTURES FOR MODERATE LEVELS OF BLAST RESISTANCE; ENGINEERING IN A THERMAL ENVIRONMENT (WARFIRE RESISTANCE AND REUSABILITY OF BUILDINGS, THERMAL RADIATION FROM NUCLEAR EXPLOSIONS); ENGINEERING IN A FALLOUT ENVIRONMENT (FUNDAMENTAL CONCEPTS IN FALLOUT SHELTER, FALLOUT PROBLEMS IN CIVIL DEFENSE). (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-666 233 15/3 5/10
HRB-SINGER INC STATE COLLEGE PA
PSYCHOLOGICAL FACTORS RELATED TO TOLERANCE OF
CONFINEMENT, NOVEMBER 1967. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
NOV 67 129P NEWMILLER,C. E. ;
FRANCIS,P. S. ;COOPER,R. B. ;
REPT. NO. HRB-75111-3F

UNCLASSIFIED REPORT

DESCRIPTORS: (*CONFINED ENVIRONMENTS,
REACTION(PSYCHOLOGY)), (*FALLOUT SHELTERS,
CONFINEMENT(PSYCHOLOGY)), CIVIL DEFENSE
SYSTEMS, BEHAVIOR, EXPERIMENTAL DESIGN,
SIMULATION, NUCLEAR WARFARE,
ADJUSTMENT(PSYCHOLOGY), ATTITUDES,
QUESTIONNAIRES, PSYCHOMETRICS,
STRESS(PSYCHOLOGY), LEADERSHIP (U)

THE REPORT PRESENTS THE FINDINGS OF TWO SHELTER CONFINEMENTS. TWO FIFTY-ONE-PERSON GROUPS WERE SEPARATELY CONFINED IN A FALLOUT SHELTER FOR SIXTY-SEVEN HOURS EACH. SEVERAL PSYCHOLOGICAL MEASURES WERE EMPLOYED IN THE STUDY, AND THEIR APPLICABILITY TO IT IS DISCUSSED. THE EFFECT OF A TRAINED SHELTER MANAGER ON DEFECATIONS AND OTHER IN-SHELTER BEHAVIOR IS ALSO PRESENTED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-667 911 13/1 13/13
PROTECTIVE STRUCTURES DEVELOPMENT CENTER FORT BELVOIR VA
AIR DISTRIBUTION STUDIES IN MULTI-ROOM SHELTERS. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
MAR 67 196P SVAERI,ODDVAR W. ;
STEIN,NORMAN J. ;
REPT. NO. PSDC-TR-(21-22)

UNCLASSIFIED REPORT

DESCRIPTORS: (*FALLOUT SHELTERS, *VENTILATION), VENTILATION FANS, VENTILATION DUCTS, GAS FLOW, TEMPERATURE, CONFIGURATION, INSTRUMENTATION, CIVIL DEFENSE SYSTEMS (U)
IDENTIFIERS: *PUNKAHS(ORIENTAL) (U)

VENTILATION STUDIES FOR DETERMINING THE EFFECTIVENESS OF MANUAL AIR MOVING DEVICES WERE CONDUCTED IN THE MULTI-ROOM ADIABATIC MOCK-UP SHELTER AT THE PROTECTIVE STRUCTURES DEVELOPMENT CENTER. THE AIR MOVING DEVICES USED IN THE STUDY WERE ADAPTED FROM THE ORIENTAL PUNKAH, A DEVICE USED TO FAN A ROOM. THEY ARE LOW IN COST, OF SIMPLE CONSTRUCTION, RUGGED AND DURABLE, CAN BE STORED INDEFINITELY UNDER MOST CONDITIONS, AND ARE CAPABLE OF CIRCULATING RELATIVELY LARGE VOLUMES OF AIR AT EXTREMELY LOW POWER REQUIREMENTS. OBSERVATIONS OF THE AIR DISTRIBUTION AND VELOCITY PATTERNS WITHIN ALL SHELTER ROOMS FOR VARIOUS CONFIGURATIONS AND VENTILATION RATES INDICATES THAT PUNKAHS EXERT A SIGNIFICANT INFLUENCE. PUNKAHS PROVIDE AN INEXPENSIVE, SIMPLE, DURABLE, AND EFFICIENT METHOD OF IMPROVING THE VENTILATION AND HABITABILITY OF FALLOUT SHELTER SPACES.
(AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO, /BML27

AD=667 932 15/2
GEORGIA EXPERIMENT STATION EXPERIMENT
STORAGE STABILITY OF CIVIL DEFENSE SHELTER
RATIONS. (U)
DESCRIPTIVE NOTE: ANNUAL REPT. NO. 5, 21 JUN 66-20 JUN 67.
DEC 67 93P CECIL,S. R. ;WOODROOF,J. G. ;
CONTRACT: DA-19-129-QM-2050(N)
MONITOR: USA-NLABS 68-26-GP

UNCLASSIFIED REPORT

DESCRIPTORS: (*CIVIL DEFENSE SYSTEMS, *SHELTERS), (*FOOD, STORAGE), MATERIALS, CEREALS, MOISTURE, CARBOHYDRATES, FIBERBOARD, CONTAINERS, BREAD, OXYGEN, FLEXURAL STRENGTH, LEAKAGE(FLUID), CORROSION, DEFECTS(MATERIALS), SURVIVAL, AGING(MATERIALS), ACCEPTABILITY, WHEAT (U)
IDENTIFIERS: *PROTECTIVE COATINGS (U)

RESULTS ARE REPORTED ON THE STABILITY OF TEN LOTS OF FALLOUT SHELTER CEREAL RATIONS STORED FOR 4 YEARS AND 3 LOTS OF CARBOHYDRATE SUPPLEMENT STORED FOR 3 YEARS AT 100F/80% R.H., 100 DEGREES/57%, 70 DEGREES/80%, 70 DEGREES/57%, 40 DEGREES/57%, AND 0 DEGREES/AMBIENT R.H. RATIONS INCLUDE 4 LOTS OF SURVIVAL CRACKERS, 4 LOTS OF SURVIVAL BISCUITS, 2 LOTS OF BULGUR WHEAT WAFERS, AND 3 LOTS OF MIXED LEMON AND CHERRY FLAVORED HARD CANDIES. DATA INCLUDE 48-MONTH AND 36-MONTH VALUES, RESPECTIVELY, FOR (1) BURSTING STRENGTH, MOISTURE CONTENT, AND GENERAL CONDITIONS OF V3C FIBERBOARD CASES; (2) RESIDUAL OXYGEN, LEAKING, CORROSION, AND COATING DEFECTS OF 2-1/2-GALLON AND 5-GALLON METAL CANS; (3) BREAKAGE AND GENERAL CONDITION OF PACKAGE SEALS, SEAMS AND MATERIALS, AND PRODUCT UNITS; (4) FRACTURE STRENGTH, PEROXIDES, AND FREE FATTY ACIDS OF WHEAT PRODUCTS; (5) PH AND SUGAR CONTENTS OF CARBOHYDRATE SUPPLEMENTS; AND (6) MOISTURE CONTENT, COLOR, SENSORY QUALITY, AND HEDONIC RATINGS FOR ALL PRODUCTS. RESULTS OF ALL EXAMINATIONS OF STORED RATIONS, INITIALLY AND THROUGH 36 AND 48 MONTHS, ARE DISCUSSED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-668 220 13/13 18/8 15/3
STANFORD RESEARCH INST MENLO PARK CALIF
AN ANALYSIS OF ROOF WASHDOWN VERSUS APPLIED SHIELDING AS A FALLOUT COUNTERMEASURE, (U)
DEC 66 41P LEE,HONG ;
CONTRACT: N00228-66-C-0231
PROJ: SRI-MU-5806

UNCLASSIFIED REPORT

DESCRIPTORS: (*FALLOUT SHELTERS, *ROOFS), (*RADIOACTIVE FALLOUT, *DECONTAMINATION), CIVIL DEFENSE SYSTEMS, SHIELDING, CLEANING, RADIOLOGICAL CONTAMINATION, RADIOLOGICAL DOSAGE, PROTECTION, RELIABILITY, COSTS (U)
IDENTIFIERS: WASHDOWN (U)

THE STUDY PROVIDES GUIDANCE ON THE BASIC APPLICABILITY AND RELATIVE WORTH OF ROOF WASHDOWN AS A FALLOUT RADIATION COUNTERMEASURE. THE BASIC PURPOSE OF ROOF WASHDOWN IS TO REDUCE THE RADIATION DOSE TO OCCUPANTS OF A BUILDING BY PREVENTING OR REDUCING THE ACCUMULATION OF FALLOUT ON THE ROOF. HOWEVER, THE ROOF WASHDOWN SYSTEM DOES NOT AFFECT THE PENETRATION OF THE ROOF BY RADIATION FROM OTHER SOURCES. IT WAS FOUND THAT UNDER SOME CIRCUMSTANCES A ROOF WASHDOWN SYSTEM IS A USEFUL MEANS FOR INCREASING THE PROTECTION OF BUILDING INTERIORS AND THAT, IN GENERAL, THE COST OF A WASHDOWN SYSTEM FOR LARGE ROOF AREA STRUCTURES WITH SMOOTH SLOPED ROOFS WILL BE LESS THAN THE COST OF PROVIDING AN EQUIVALENT AMOUNT OF SHIELDING. HOWEVER, APPLIED SHIELDING PROVIDES 100 PERCENT RELIABILITY WHEREAS ROOF WASHDOWN SYSTEMS MAY NOT BE AS RELIABLE. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-669 258 15/3 13/12
GENERAL AMERICAN TRANSPORTATION CORP NILES ILL GENERAL AMERICAN RESEARCH DIV
SPECIALIZED EVALUATIONS OF SHELTER EQUIPMENT AND PROCEDURES. (U)
DESCRIPTIVE NOTE: FINAL REPT.
JAN 68 192P MEIER,HARRY A. ;
SMITH,ROBERT W. ;GAYNOR,MICHAEL W. ;
REPT. NO. GARD-1292-F
MONITOR: OCD 1522A

UNCLASSIFIED REPORT

DESCRIPTORS: (*RADIOACTIVE FALLOUT, SHELTERS), (*CONFINED ENVIRONMENTS, SURVIVAL KITS), CIVIL DEFENSE SYSTEMS, VENTILATION DUCTS, ILLUMINATION, TANKS(CONTAINERS), MANAGEMENT PLANNING, MODELS(SIMULATIONS), MODEL TESTS, RADIATION MONITORS, INSTRUCTION MANUALS, CONSTRUCTION, PERFORMANCE(HUMAN), REACTION(PSYCHOLOGY), QUESTIONNAIRES, FAILURE(MECHANICS), GROUP DYNAMICS, OPERATION (U)

THREE SERIES OF TESTS EVALUATED A VENTILATION KIT, LIGHTING KIT, AND DUAL-PURPOSE CONTAINER FOR FUNCTIONAL ADEQUACY AND EASE OF ASSEMBLY AND OPERATION IN SIMULATED FALLOUT SHELTER ENVIRONMENTS. THE FIRST SERIES OF TESTS USED 2-MAN TEAMS AND LIGHT AND DARK CONDITIONS. THE SECOND SERIES 6-MAN TEAMS, AND THE THIRD SERIES 400 PEOPLE IN A 48 HOUR SHELTER OCCUPANCY. THE FIRST AND SECOND TEST SERIES EVALUATED AND REVISED ASSEMBLY AND OPERATING INSTRUCTIONS, AND DEVELOPED SHELTER MANAGER *FOCUS AIDES* TO ELIMINATE DIFFICULTIES DISCOVERED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-670 027 13/1 15/3
GENERAL AMERICAN TRANSPORTATION CORP NILES ILL GENERAL AMERICAN RESEARCH DIV
VENTILATION EQUIPMENT ANALYSIS FOR BASEMENT SHELTERS. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
FEB 68 270P LIS,STEPHEN J. ;
BEHLS,HERMAN F. ;
REPT. NO. GARD-1278-F

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH STANFORD RESEARCH INST., MENLO PARK, CALIF.

DESCRIPTORS: (*FALLOUT SHELTERS, *COOLING * VENTILATING EQUIPMENT), VENTILATION, UNDERGROUND STRUCTURES, CIVIL DEFENSE SYSTEMS, MODIFICATION KITS, SYSTEMS ENGINEERING, STATISTICAL ANALYSIS, PORTABLE, PROCUREMENT, DIAGRAMS, DUCTS, VENTILATION FANS (U)
IDENTIFIERS: GRAPHS(CHARTS) (U)

SHELTER AND VENTILATOR EQUIPMENT ANALYSES WERE PERFORMED TO DETERMINE THE BEST VENTILATOR KITS FOR THE 138,000 BELOW-GRADE FALLOUT SHELTERS IDENTIFIED DURING THE SECOND PHASE OF THE NATIONAL FALLOUT SHELTER SURVEY (NFSS). THE BASIS FOR THE STUDY WAS A RANDOM SAMPLING OF 160 FACILITIES. SKETCHES OF THESE SHELTERS WERE ANALYZED FOR BASIC CHARACTERISTICS THAT DEFINE THE VENTILATION REQUIREMENTS, AND BY MATCHING THE PERFORMANCE OF OVER 600 FANS TO THE SHELTER REQUIREMENTS, THE BEST SEVEN KITS WERE CHOSEN BASED ON A LEAST-COST VENTILATION SYSTEM. THE FINAL SELECTION OF KITS TO BE STOCKED DEPENDS ON CONSIDERATIONS OTHER THAN ENGINEERING, PRIMARILY HUMAN FACTORS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-670 950 13/13 13/1
STANFORD RESEARCH INST MENLO PARK CALIF
FEASIBILITY OF LOW COST VENTILATION TECHNIQUES. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
DEC 67 93P HORI,TATSU ;
PROJ: SRI-4949-251

UNCLASSIFIED REPORT

DESCRIPTORS: (*FALLOUT SHELTERS, *VENTILATION FANS), COSTS, FEASIBILITY STUDIES, CIVIL DEFENSE SYSTEMS, VENTILATION, AERODYNAMIC CHARACTERISTICS, VENTILATION DUCTS, GAS PUMPS (U)
IDENTIFIERS: *PUNKAHS (U)

THE SPECIFIC OBJECTIVE OF THE WORK PROJECT WAS TO EVALUATE THE USE OF A PUNKAH TO DISTRIBUTE AIR WITHIN A FALLOUT SHELTER AND TO DETERMINE ITS FLOW CHARACTERISTICS. THE PUNKAH IS AN OSCILLATING PANEL, WITH A SERIES OF SIMPLE ONE-WAY VALVES, THAT CAN BE HUNG FROM A CEILING OR IN AN OPEN DOORWAY. IN THE EXPERIMENTS, THE PUNKAH WAS USED NOT ONLY TO DISTRIBUTE AIR WITHIN A ROOM, BUT ALSO TO MOVE AIR FROM ONE ROOM TO ANOTHER. PUNKAHS WERE TRIED IN VARIOUS PARTS OF THE ROOMS THAT COMPRISED THE EXPERIMENTAL SHELTER, AND VARIOUS PANELING CONFIGURATIONS FOR IMPROVING THE AIR DELIVERY WERE INVESTIGATED. OF SPECIAL INTEREST WAS THE PROBLEM OF VENTILATING A DEAD-END COMPARTMENT, THIS BEING THE MOST DIFFICULT TYPE OF ROOM TO VENTILATE BECAUSE ITS ONLY AIR INLET IS A SINGLE INSIDE DOORWAY. THE INTERNAL HEAT LOAD PROVIDED WAS ALL SENSIBLE HEAT. DRY-BULB TEMPERATURE READINGS WERE TAKEN AT SIX ROOM LEVELS TO EVALUATE THE COOLING EFFECT OF THE PUNKAH. THE PUNKAH WAS CAPABLE OF VENTILATING A DEAD-END ROOM AND ALSO OF MIXING THE AIR WITHIN SUCH A ROOM SUFFICIENTLY TO MAINTAIN A CLIMATIC CONDITION VERY NEAR TO THAT OF THE ADJACENT ROOM. FLOW TESTS WERE MADE ON THE HALF-DOOR SIZED PUNKAH. FOR PURPOSES OF CONTROLLING FLOW AND PROVIDING MEASUREMENTS OF VELOCITY AND PRESSURE, TESTS WERE PERFORMED USING A DUCTED HOUSING. PERFORMANCE CURVES FOR THE PUNKAH OPERATING IN FOUR DIFFERENT MODES WERE DEVELOPED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-671 641 15/3
AMERICAN INSTITUTES FOR RESEARCH PITTSBURGH PA
SHELTER MANAGEMENT ACTIVITIES IN THE INCREASED READINESS PERIOD. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
APR 68 102P BEND,EMIL ;JEFFREYS,FRANK B. ;
REPT. NO. AIR-D93E-4/68-FR
MONITOR: OCD 1543A

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: INCLUDES SUMMARY OF FINAL REPORT.

DESCRIPTORS: (*CIVIL DEFENSE SYSTEMS, *SHELTERS), (*CIVIL DEFENSE PERSONNEL, SHELTERS), MANAGEMENT PLANNING, FALLOUT SHELTERS, SELECTION, OPERATIONAL READINESS, TRAINING, PUBLIC RELATIONS, DISASTERS, SURVIVAL, STRESS(PSYCHOLOGY), REACTION(PSYCHOLOGY), WARNING SYSTEMS, FEEDBACK (U)
IDENTIFIERS: INCREASED READINESS (U)

THIS STUDY OF SHELTER MANAGEMENT ACTIVITIES IN THE INCREASED READINESS (IR) PHASE IS DIVIDED INTO TWO PARTS. PART 1 CONSISTS OF RECOMMENDATIONS FOR SM ACTIVITIES. IT COVERS: (1) SELECTION AND RECRUITMENT OF SHELTER PERSONNEL, (2) TRAINING, (3) PUBLIC INFORMATION, AND (4) SHELTER PREPARATIONS DURING THE IR PERIOD. SELECTION, RECRUITMENT, AND TRAINING GUIDELINES ARE CENTERED ABOUT THREE LEVELS OF SHELTER STAFFING: (1) EXECUTIVE SHELTER MANAGERS (FOR LARGE SHELTER), (2) 'REGULER' SHELTER MANAGERS, AND (3) TASK LEADERS-SPECIALISTS IN SELECTED SHELTER OPERATIONS VITAL FOR SURVIVAL. PUBLIC INFORMATION GUIDELINES DEAL WITH PREPARING IR INFORMATIONAL MATERIALS, DISTRIBUTING AND UPDATING THEM, AND ESTABLISHING FEEDBACK MECHANISMS. GUIDELINES TO THE PUBLIC ABOUT SHELTER LIVING ARE DISCUSSED. SHELTER PREPARATION GUIDELINES INCLUDE PLANNING FOR AN OPTIMUM LARGE SHELTER CONFIGURATION OF SEMI-AUTONOMOUS GROUPINGS OF ABOUT 300 PERSONS EACH. THE ISSUES OF 'PRIVATE PROPERTY' AND IN-SHELTER GUIDANCE MATERIALS ARE ALSO DISCUSSED. PART 2 OF THE REPORT CONSISTS OF A REVIEW OF THE RESEARCH LITERATURE PERTINENT TO SHELTER MANAGEMENT ACTIVITIES IN THE INCREASED READINESS PERIOD. THE MAJOR TOPICS COVERED ARE STRESS AND DISASTER BEHAVIOR, WARNINGS, AND SHELTER MANAGEMENT. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-671 703 13/2 15/3
ARMY ENGINEER RESEARCH AND DEVELOPMENT LABS FORT BELVOIR VA
HUMAN WASTE STUDIES IN AN OCCUPIED CIVIL DEFENSE SHELTER. (U)
OCT 65 98P DESROSIERS,PAUL E. I
PROJ: OCD-OS-63-235

UNCLASSIFIED REPORT

DESCRIPTORS: (*CIVIL DEFENSE SYSTEMS, SHELTERS), (*WASTES(SANITARY ENGINEERING), STORAGE), HUMANS, SAMPLING, WATER, BACTERIA, WASTE GASES, ODORS, OLEIC ACIDS, SULFATES, GERMICIDES, CONTAINERS (U)
IDENTIFIERS: SANITARY VAULTS (U)

THE REPORT COVERS HUMAN WASTE STUDIES CONDUCTED IN AN OCCUPIED CIVIL DEFENSE FALLOUT SHELTER FACILITY. BOTH THE SANITARY VALUT WASTE SYSTEM AND BREFERRED CHEMICAL ODOR CONTROL AGENT WERE EVALUATED UNDER THESE SHELTER CONDITIONS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-673 078 15/2 6/18
NAVAL CIVIL ENGINEERING LAB PORT HUENEME CALIF
CEILING-SHINE CONTRIBUTION WITHIN BUILDINGS FROM FALLOUT RADIATION FIELD. (U)
DESCRIPTIVE NOTE: TECHNICAL STUDY IN ATOMIC DEFENSE ENGINEERING,
FEB 63 14P LEDOUX,J. C. ;
REPT. NO. NCEL-TS-30

UNCLASSIFIED REPORT

DESCRIPTORS: (*FALLOUT SHELTERS, RADIATION HAZARDS), DESIGN, CIVIL DEFENSE SYSTEMS, REFLECTION, BUILDINGS, CONFIGURATION, INSTRUCTION MANUALS, RADIOACTIVE FALLOUT, PERMEABILITY, SHIELDING, SCATTERING, MATHEMATICAL MODELS (U)
IDENTIFIERS: CEILING-SHINE, TOTAL RADIATION (U)

CEILING-SHINE IS THAT RADIATION WHICH ENTERS THROUGH THE WALL OF A STRUCTURE, REFLECTS FROM THE CEILING AND INCREASES THE RADIATION WITHIN A SHIELDED SPACE. IN MOST CASES THE CEILING-SHINE CONTRIBUTION IS SMALL WHEN COMPARED TO DIRECT AND WALL-SCATTERED RADIATION, IN SOME CASES IT CAN BE AN IMPORTANT CONTRIBUTION. THE PRESENT METHOD OF ANALYZING BUILDINGS, THE ENGINEERING MANUAL, OCD PM 100-1, INCLUDES THE CEILING-SHINE EFFECT IN THE AIR SCATTERED CONTRIBUTION, BUT DOES NOT PROVIDE A SEPARATE METHOD OF ANALYSIS. THIS REPORT DISCUSSES THE THEORY AND APPLICATION OF CEILING-SHINE AND PROPOSES A METHOD OF COMPUTING ITS CONTRIBUTION. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-673 722 15/3 13/13 5/2
SYSTEM VELOPMENT CORP SANTA MONICA CALIF
A STUDY OF THE ADOPTION-DIFFUSION PROCESS IN THE DEVELOPMENT OF SHELTER IN NEW CONSTRUCTION. (U)
DESCRIPTIVE NOTE: TECHNICAL MEMO.,
JUN 68 73P STREICH,EUGENE R. ;
WELLISHCH,JEAN B. ;
REPT. NO. SDC-TM-3892/001/00
CONTRACT: DAHC20-67-C-0178

UNCLASSIFIED REPORT

DESCRIPTORS: (•FALLOUT SHELTERS, •BUILDINGS), (•CIVIL DEFENSE SYSTEMS, FALLOUT SHELTERS), DESIGN, COMMUNICATION SYSTEMS, DIFFUSION, EDUCATION, SOCIAL COMMUNICATION, RADIOACTIVE FALLOUT, NUCLEAR RADIATION, SHOCK WAVES, PROTECTION, BLAST (U)
IDENTIFIERS: SLANTING TECHNIQUES, INNOVATION(TECHNOLOGY), OVERPRESSURE (U)

A STUDY OF THE DIFFUSION PROCESS INVOLVED IN IMPLEMENTING CIVIL DEFENSE PROGRAMS DIRECTED TOWARD ENCOURAGING THE INCORPORATION OF FALLOUT SHELTER IN NEW CONSTRUCTION WAS PERFORMED. THE THEORETICAL LITERATURE ON DIFFUSION-ADOPTION PROCESSES CONCERNING THE ADOPTION OR REJECTION OF INNOVATIONS WAS EXAMINED FOR APPLICABILITY, THE ACTUAL PROGRAM IMPLEMENTATION PROCESS WAS EXAMINED, AND TO DETERMINE THE EFFECTIVENESS OF PROGRAM IMPLEMENTATION MEASURES. INTERVIEWS WERE CONDUCTED WITH BOTH PROGRAM PERSONNEL AND POTENTIAL ADOPTERS -- BUILDING OWNERS AND ARCHITECTS -- IN TWO CIVIL DEFENSE REGIONS. AN ANALYSIS OF THE DATA WAS MADE, RESULTS DESCRIBED, AND SUGGESTIONS FOR FURTHER STUDY PRESENTED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-673 778 15/3

GEORGIA UNIV ATHENS CIVIL DEFENSE RESEARCH

SHELTER OCCUPANCY STUDIES AT THE UNIVERSITY OF GEORGIA. (U)

DESCRIPTIVE NOTE: FINAL REPT.,

DEC 67 329P HAMMES,JOHN A. ;

AHEARN,THOMAS R. ;

CONTRACT: DAHC20-67-C-0144

PROJ: OCD-1500

TASK: 1520

UNCLASSIFIED REPORT

DESCRIPTORS: (*FALLOUT SHELTERS, MANAGEMENT PLANNING), CONFINED ENVIRONMENTS, CIVIL DEFENSE SYSTEMS, CIVIL DEFENSE PERSONNEL, TRAINING, PERSONNEL MANAGEMENT, QUESTIONNAIRES, HANDBOOKS, FOOD, SANITARY ENGINEERING, MEDICAL SUPPLIES (U)

IDENTIFIERS: HABITABILITY (U)

IN 1967 THE CIVIL DEFENSE RESEARCH STAFF AT THE UNIVERSITY OF GEORGIA CONDUCTED TWO SIMULATED FALLOUT SHELTER OCCUPANCY STUDIES; ONE, A 722-PERSON TEST, AND THE OTHER, A 1,046-PERSON TEST. MEN, WOMEN, AND CHILDREN, AGED 6 MONTHS TO 74 YEARS, PARTICIPATED. DETAILED FINDINGS ARE PRESENTED IN THIS REPORT, AS WELL AS A STUDY OUTLINE OF A 2-HOUR EMERGENCY SHELTER MANAGEMENT TRAINING COURSE. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-673 817 6/8 15/3 13/13

GEORGIA EXPERIMENT STATION EXPERIMENT STORAGE STABILITY OF CIVIL DEFENSE SHELTER RATIONS. (U)

DESCRIPTIVE NOTE: ANNUAL REPT. NO. 6, 1 JUL 67-30 JUN 68,

JUN 68 71P CECIL,SAM R. ;

REPT. NO. 156-VI-GES

CONTRACT: DAHC20-67-C-0136

UNCLASSIFIED REPORT

DESCRIPTORS: (*FOOD, SURVIVAL KITS), (*STORAGE, AGING(MATERIALS)), STOCK LEVEL CONTROL, FOOD DISPENSING, CEREALS, BREAD, STABILITY, ODORS, MOISTURE, DEGRADATION, TEMPERATURE, PH, PEROXIDES, TASTE, STATISTICAL ANALYSIS, CIVIL DEFENSE SYSTEMS, FALLOUT SHELTERS, CONTAINERS (U)

IDENTIFIERS: FLAVORS, *SHELTER RATIONS (U)

RESULTS ARE REPORTED ON THE STABILITY OF TEN LOTS OF FALLOUT SHELTER CEREAL RATIONS STORED FOR 5 YEARS AND 3 LOTS OF CARBOHYDRATE SUPPLEMENT STORED FOR 4 YEARS. RATIONS INCLUDE 4 LOTS OF SURVIVAL CRACKERS, 4 LOTS OF SURVIVAL BISCUITS, 2 LOTS OF BULGUR WHEAT WAFERS, AND 3 LOTS OF MIXED LEMON AND CHERRY FLAVORED HARD CANDIES. DATA INCLUDE 60-MONTH AND 48-MONTH VALUES, RESPECTIVELY, FOR (1) BURSTING STRENGTH, MOISTURE CONTENT, AND GENERAL CONDITIONS OF V3C FIBER BOARD CASES; (2) RESIDUAL OXYGEN, LEAKING, CORROSION, AND COATING DEFECTS OF 2 1/2-GALLON AND 6-GALLON METAL CANS; (3) BREAKAGE AND GENERAL CONDITION OF PACKAGE SEALS, SEAMS, MATERIALS, AND PRODUCTS UNITS; (4) FRACTURE STRENGTH, PEROXIDES, AND FREE FATTY ACIDS OF WHEAT PRODUCTS; (5) PH AND SUGAR CONTENTS OF CARBOHYDRATE SUPPLEMENTS; AND (6) MOISTURE CONTENT, COLOR, SENSORY QUALITY, AND HEDONIC RATINGS FOR ALL PRODUCTS. RESULTS OF PREVIOUS EXAMINATIONS OF STORED RATIONS ARE DISCUSSED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /EML27

AD-674 254 15/2 13/13 16/3
BECHTEL CORP GAITHERSBURG MD
PROTECTIVE BLAST SHELTER SYSTEM ANALYSIS DETROIT, MICHIGAN. (U)
DESCRIPTIVE NOTE: FINAL REPT.
JUN 68 324P

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SUPPORTED IN PART BY OFFICE OF CIVIL DEFENSE, WASHINGTON, D. C.

DESCRIPTORS: (*CIVIL DEFENSE SYSTEMS, MICHIGAN), (*NUCLEAR EXPLOSIONS, *SHELTERS), SITE SELECTION, WATER SUPPLIES, CONCRETE, BLAST, PROTECTION, DESIGN, UNDERGROUND STRUCTURES, POPULATION, URBAN AREAS, COSTS, FIRES, CONSTRUCTION, HAZARDS, SOILS, SYSTEMS ENGINEERING, NUCLEAR EXPLOSIONS, STRUCTURAL PROPERTIES, FEASIBILITY STUDIES, STATISTICAL ANALYSIS (U)
IDENTIFIERS: OVERPRESSURE, YIELD(NUCLEAR EXPLOSIONS) (U)

THE PURPOSE OF THE STUDY IS TO DETERMINE THE PROBLEMS INVOLVED IN SELECTING, ACQUIRING, AND UTILIZING SITES FOR A SYSTEM OF SHELTERS DESIGNED TO PROVIDE A UNIFORM LEVEL OF BLAST PROTECTION FOR THE ENTIRE POPULATION OF DETROIT, MICHIGAN.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-674 663 13/13 6/11 18/3
IIT RESEARCH INST CHICAGO ILL
CIVIL DEFENSE SHELTER OPTIONS FOR FALLOUT AND BLAST PROTECTION (SINGLE-PURPOSE). (U)
DESCRIPTIVE NOTE: FINAL REPT. MAR 67-FEB 68, JUN 68 220P LONGINOW,ANATOLE ; STEPANEK,OTTO J. ;
CONTRACT: DAHC20-67-C-0167
PROJ: IITRI-J6115

UNCLASSIFIED REPORT

DESCRIPTORS: (*SHELTERS, NUCLEAR EXPLOSIONS), (*CIVIL DEFENSE SYSTEMS, SHELTERS), URBAN AREAS, RADIOACTIVE FALLOUT, BLAST, DESIGN, COSTS, HEMISPHERICAL SHELLS, SITE SELECTION, SOILS, LIFE SUPPORT, UNDERGROUND STRUCTURES, LOADING(MECHANICS), VOLUME, MATERIALS, DOORS, SURVIVAL, PROTECTION, HARDENING (U)
IDENTIFIERS: *BASEMENT SHELTERS, OVERPRESSURE (U)

THE OBJECTIVE C THIS STUDY WAS TO DEVELOP DATA ON SHELTER CONCEPTS, COSTS AND PROTECTIVE CAPABILITIES OF SINGLE-PURPOSE SHELTERS CAPABLE OF DEPLOYMENT IN URBAN AND/OR PERIPHERAL REGIONS. TWO CATEGORIES OF SHELTER STRUCTURES WERE CONSIDERED, 'PERMANENT' AND 'EXPEDIENT.' THE FORMER ARE THOSE SHELTERS REQUIRING SPECIALIZED SKILLS, EQUIPMENT, COMMUNICATION AND SUPPLY ROUTES, ETC.; THE LATTER ARE CAPABLE OF BEING CONSTRUCTED RAPIDLY BY UNSKILLED OR SEMISKILLED LABOR, USING LITTLE OR NO SPECIALIZED EQUIPMENT. THE EFFORT WAS PRIMARILY CONCERNED WITH PERMANENT SHELTERS. EACH STRUCTURE TYPE WAS DESIGNED AND COSTED FOR THREE SHELTER LOCATIONS RELATIVE TO THE GROUND SURFACE, SIX HABITABILITY OPTIONS AND FOUR NUCLEAR WEAPONS ENVIRONMENTS CHARACTERIZED BY FALLOUT RADIATION ALONE, AND 10, 20 AND 30 PSI FREE FIELD OVERPRESSURE AND ASSOCIATED EFFECTS RESULTING FROM MEGATON RANGE NUCLEAR WEAPONS. A TOTAL OF 864 SHELTER COST OPTIONS ARE PRESENTED. A COST INVESTIGATION OF BASEMENT SHELTERS IS INCLUDED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-675 410 18/8 13/13
ARMY NUCLEAR DEFENSE LAB EDGEWOOD ARSENAL MD
CALCULATIONS WITH UNC-SAM-2 OF EXPOSURE RATES
MEASURED IN AN OPEN BASEMENT, (U)
JUL 68 22P BUHL, A. R. ; LACETERA, JANET
E. ;
REPT. NO. NDL-TM-44
PROJ: DA-1-B-022601-A-089
TASK: 1-B-022601-A-08901

UNCLASSIFIED REPORT

DESCRIPTORS: (*UNDERGROUND STRUCTURES,
RADIOACTIVE FALLOUT), DOSE RATE, SHIELDING,
CIVIL DEFENSE SYSTEMS, MODELS(SIMULATIONS),
DETECTORS, PROBABILITY, MONTE CARLO METHOD,
PROGRAMMING(COMPUTERS), DIGITAL COMPUTERS,
NUMERICAL METHODS AND PROCEDURES (U)
IDENTIFIERS: GRAPHS(CHARTS), OPEN BASEMENTS,
UNC/SAM 2 PROGRAMMING LANGUAGE (U)

A NUMBER OF EXPERIMENTAL STUDIES ARE BEING
CONDUCTED TO VALIDATE THEORETICAL METHODS OF
CALCULATING FALLOUT PROTECTION AFFORDED BY
STRUCTURES. AS A PART OF THIS PROGRAM, EXPOSURE
RATES IN AN OPEN BASEMENT WERE MEASURED AT THE US
ARMY NUCLEAR DEFENSE LABORATORY (USANDL).
THIS REPORT PRESENTS CALCULATED EXPOSURE RATES FOR
FORTY-EIGHT DETECTORS LOCATED WITHIN THE OPEN
BASEMENT. THESE RESULTS WERE OBTAINED USING UNC-
SAM-2, A MONTE CARLO RADIATION TRANSPORT
DIGITAL COMPUTER CODE. THE CALCULATED RESULTS ARE
COMPARED WITH EXPERIMENTAL MEASUREMENTS AND ALSO WITH
COMPARABLE ADJOINT (MONTE CARLO) RESULTS.
(AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-675 466 15/3 18/6 9/2
OAK RIDGE NATIONAL LAB TENN
A COMPARISON OF THE BUILDING PROTECTION FACTOR CODES CAPS-2 AND PF-COMP. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
JUL 68 61P GRITZNER,M. L. ;STEVENS,P. N. ;
REPT. NO. ORNL-TM-2285

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SUPPORTED IN PART BY OFFICE OF CIVIL DEFENSE, WASHINGTON, D.C.

DESCRIPTORS: (*FALLOUT SHELTERS, PROTECTION), (*SHIELDING, PROGRAMMING(COMPUTERS)), DESIGN, CORRELATION TECHNIQUES, WALLS, FLOORS, CIVIL DEFENSE SYSTEMS (U)
IDENTIFIERS: PF-COMP COMPUTER PROGRAM, CAPS-2 COMPUTER PROGRAM, COMPUTER AIDED DESIGN (U)

THE RELATIVE MERITS OF TWO COMPUTER CODES, PF-COMP AND CAPS-2, FOR CALCULATING RADIATION FALLOUT PROTECTION FACTORS FOR SHELTER AREAS WERE INVESTIGATED BY COMPARING THE CODE RESULTS WITH THOSE FROM HAND CALCULATIONS BASED ON THE ENGINEERING MANUAL METHOD. FIVE BUILDING TYPES WERE CONSIDERED. FOR PROTECTION FACTORS IN THE RANGE OF 1 TO 100, THE PF-COMP CODE WAS FOUND TO YIELD VALUES THAT WERE WITHIN PLUS OR MINUS 15% OF THE HAND-CALCULATED VALUES, WHILE THE CAPS-2 CODE GAVE RESULTS THAT WERE WITHIN -44 TO +80% OF THE HAND-CALCULATED VALUES. FOR PROTECTION FACTORS GREATER THAN 100, THE PF-COMP CODE RESULTS WERE WITHIN +41 TO +36% AND THE CAPS-2 CODE RESULTS WERE WITHIN -10 TO -58% OF THE HAND-CALCULATED VALUES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-676 183 15/6 13/13 15/3
IIT RESEARCH INST CHICAGO ILL
CASUALTY PREDICTION COMPARISONS. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
JUL 68 55P FEINSTEIN,D. I. ;
CONTRACT: DAHC20-67-C-0167
PROJ: IITRI-J6114

UNCLASSIFIED REPORT

DESCRIPTORS: (*FALLOUT SHELTERS, PROTECTION), (NUCLEAR WARFARE CASUALTIES, POSTURE), (*POSTURE, SURVIVAL), PREDICTIONS, EFFECTIVENESS, CONFIGURATION, SURFACE BURST, BUILDINGS, BRICK, WOOD, STEEL, DEBRIS, MORTALITY RATES, WOUNDS & INJURIES, CIVIL DEFENSE SYSTEMS (U)

THE STUDY UTILIZED A PREVIOUSLY DEVELOPED COMPUTER MODEL, THE SHELTER EVALUATION PROGRAM (SEP) CODE, TO INVESTIGATE THE EFFECTIVENESS OF VARIOUS SHELTER CONFIGURATIONS AND OCCUPANT POSTURES WITH REGARD TO RESISTING THE DIRECT EFFECTS OF A 10 MT SURFACE BURST OVER A RANGE OF INCIDENT PRESSURE LEVELS. THE SHELTER CONFIGURATIONS INCLUDE WOOD FRAME SINGLE-STORY AND TWO-STORY, LOAD BEARING BRICK WALL THREE-STORY RESIDENTIAL, SEVEN-STORY BRICK LOAD BEARING WALL (WAREHOUSE), SIX-STORY STEEL FRAME CURTAIN WALL COMMERCIAL, AND NO SHELTER OUTSIDE CASES. SHELTER OCCUPANTS WERE CONSIDERED IN TWO POSTURES; STANDING AND PRONE. RESULTS INDICATE THAT THERE IS A SIGNIFICANT REDUCTION IN CASUALTIES WHEN SHELTER OCCUPANTS ARE IN A PRONE STATE. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-676 221 13/13 15/3
STANFORD RESEARCH INST MENLO PARK CALIF
CONSTRUCTION RESOURCES AVAILABILITY IN SUPPORT OF BLAST SHELTER PROGRAMS. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
MAY 68 212P CURIONE,CHARLES ;
DICKMAN,ROBERT ;DOUGLAS,JAMES ;KRAKOW,HERBERT ;

CONTRACT: DAHC20-67-C-0136
PROJ: SRI-MU-6300-040

UNCLASSIFIED REPORT

DESCRIPTORS: (*SHELTERS, CONSTRUCTION), (*CIVIL DEFENSE SYSTEMS, SHELTERS), ECONOMICS, POPULATION, CONSTRUCTION MATERIALS, PREDICTIONS, FALLOUT SHELTERS, BLAST, COSTS, MANPOWER, DESIGN, RESEARCH PROGRAM ADMINISTRATION, INDUSTRIAL PRODUCTION, TIME, EARTH-HANDLING EQUIPMENT, SMALL TOOLS (U)
IDENTIFIERS: REAL ESTATE (U)

THE PRIMARY OBJECTIVE OF THIS STUDY WAS TO EVALUATE THE IMPACT OF A NATIONAL BLAST SHELTER ON THE CONSTRUCTION INDUSTRY RESOURCES IN THE UNITED STATES. SEVEN NATIONAL SHELTER PROGRAMS WERE ASSUMED, EACH IN INCREASING ORDER CAPABLE OF PROVIDING A HIGHER DEGREE OF PROTECTION. POPULATION WAS PROJECTED. EACH PROGRAM WAS COSTED IN DOLLARS FOR THAT PORTION OF THE POPULATION BROTECTED AS DISTRIBUTED AND PROJECTED FOR 1965, 1970, AND 1975. DATA RELATED TO CAPACITY OF CONSTRUCTION, DESIGN, MATERIAL AND EQUIPMENT, AVAILABLE AND USEFUL REAL ESTATE, AND OTHER RESOURCES WERE COLLECTED AND ADJUSTED TO A COMMON DESCRIPTOR, DOLLARS. THE DOLLARS WERE THEN PRESENTED FOR BASE YEAR 1965 AND FOR YEARS 1970 AND 1975. THE REQUIREMENTS WERE THEN BALANCED AGAINST THE AVAILABLE RESOURCES AND THE DEFICITS NOTED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-676 852 5/9 15/3 13/13
AMERICAN INSTITUTES FOR RESEARCH PITTSBURGH PA
EXPANSION OF RESEARCH DATA FROM SHELTER OCCUPANCY EXERCISES. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
AUG 68 98P COLLINS,ROBERT A. ;
BEND,EMIL ;
REPT. NO. AIR-F26-8/68-FR

UNCLASSIFIED REPORT

DESCRIPTORS: (*CIVIL DEFENSE SYSTEMS, *TRAINING), FALLOUT SHELTERS, STUDENTS, QUESTIONNAIRES, SOCIOMETRICS, DATA, COLLECTING METHODS, DATA PROCESSING SYSTEMS, MANAGEMENT ENGINEERING (U)
IDENTIFIERS: HABITABILITY, *SHELTER EXERCISES (U)

THE REPORT DESCRIBES THE RESULTS OF THE CONTINUATION OF A PROJECT TO COLLECT AND ANALYZE HABITABILITY DATA FROM SHELTER EXERCISES HELD IN CONJUNCTION WITH CIVIL DEFENSE TRAINING COURSES. ABOUT 1,300 QUESTIONNAIRES WERE RECEIVED FROM STUDENTS, MOSTLY ASSOCIATED WITH CDUEP COURSES. IN ADDITION, 60 INSTRUCTOR FORMS, IN WHICH INSTRUCTORS SUMMARIZED THEIR RECENT SHELTER EXERCISE EXPERIENCES, WERE RETURNED TO AIR. AMONG THE INDEPENDENT VARIABLES THAT WERE CONSIDERED IN THE ANALYSIS WERE: (1) SHELTEREES PRIOR EXPECTATIONS OF THE SHELTER STAY, (2) LENGTH OF SHELTER STAY, (3) GEOGRAPHICAL AREA, AND (4) SEX OF THE STUDENT. AS A SECOND PART OF THE REPORT, AN EXPERIMENTAL SHELTEREE REGISTRATION FORM FOR USE IN LARGE SHELTERS IS DESCRIBED. THIS FORM CAN BE FILLED OUT IN THE ABSENCE OF WRITING IMPLEMENTS AND ALSO PROVIDES A MODEST DATA HANDLING CAPABILITY FOR THE SHELTER ADMINISTRATION TEAM. THE REGISTRATION FORM CAN BE USED FOR RESEARCH PURPOSES IN EXERCISES, AS WELL AS STOCKED FOR USE IN SHELTERS.
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-676 857 15/3
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF
MEASURES OF WARNING EFFECTIVENESS. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
MAR 68 79P GAYDOS,HENRY F. ;
MILLER,BILL D. ;NEILSON,JOHN O. ;
REPT. NO. SDC-TM-L-3390/003/01

UNCLASSIFIED REPORT

DESCRIPTORS: (*CIVIL DEFENSE SYSTEMS, WARNING SYSTEMS), EFFECTIVENESS, MATHEMATICAL MODELS, SHELTERS, POPULATION (U)

THE REPORT PRESENTS AN ANALYSIS OF THE FUNDAMENTAL VARIABLE RELEVANT TO THE CONSTRUCTION OF A MODEL FOR MEASURING WARNING EFFECTIVENESS. INCLUDED IS A CRITIQUE OF AN EXISTING MODEL AND SUGGESTIONS FOR A MORE DIRECT APPROACH TO THE PROBLEM OF MEASUREMENT. ALSO DISCUSSED ARE THE PROBLEMS OF MOVEMENT TO SHELTER IN THE CONTEXTS OF VARIOUS ENVIRONMENTAL CONDITIONS AND THEIR IMPLICATIONS WITH RESPECT TO REQUIREMENTS FOR A COMPREHENSIVE MOVEMENT TO SHELTER MODEL. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-679 874 13/1 13/13 15/3
GENERAL AMERICAN TRANSPORTATION CORP NILES ILL GENERAL AMERICAN RESEARCH DIV
ADEQUACY OF EVAPORATIVE COOLING AND SHELTER ENVIRONMENTAL PREDICTION. (U)
DESCRIPTIVE NOTE: FINAL REPT. 14 FEB 67-30 JUN 68,
JUN 68 310P BASCHIERE,RONALD J. ;
RATHMANN,CARL E. ;LOKMANHEKIM,METIN ;
REPT. NO. GARD-1423-F

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH STANFORD RESEARCH INST., MENLO PARK, CALIF.

DESCRIPTORS: (*CIVIL DEFENSE SYSTEMS, FALLOUT SHELTERS), (*FALLOUT SHELTERS, VENTILATION), HANDBOOKS, CARBON DIOXIDE, HEAT TRANSFER, TOXICITY, COOLING, EVAPORATION, HUMIDITY, MATHEMATICAL MODELS, MAP PROJECTION, UNDERGROUND STRUCTURES, TABLES (U)
IDENTIFIERS: GRAPHS(CHARTS) (U)

THE FEASIBILITY OF EMPLOYING EVAPORATIVE COOLERS IN RELIEVING THERMAL STRESSES IN FALLOUT SHELTERS IS INVESTIGATED, AND THE EFFECTS OF PLACING THE DEVICES AT VARIOUS POINTS IN A SHELTER VENTILATION SYSTEM ARE COMPARED. FORCED VENTILATION RATES USING EVAPORATIVE COOLING ARE PRESENTED ALONG WITH NATIONAL MAPS OF ISOVENTILATION CONTOURS. ADEQUACY CURVES OF FORCED VENTILATION WITH EVAPORATIVE COOLING ARE ALSO INCLUDED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-680 936 13/13 13/12 15/3
VERTEX CORP KENSINGTON MD
PROTECTIVE CAPABILITY OF THE NATIONAL FALLOUT SHELTER SYSTEM. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
NOV 68 108P CHILDERS,H. MALCOLM ;
VANSANT,CARL A. ;MOKRAUER,DONALD F. ;
REPT. NO. VERTEX-TR-68-2
CONTRACT: DAHC20-67-C-0148

UNCLASSIFIED REPORT

DESCRIPTORS: (*FALLOUT SHELTERS, *SAFETY), PROTECTION, CIVIL DEFENSE SYSTEMS, DEBRIS, EXPLOSION EFFECTS, NUCLEAR EXPLOSIONS, NUCLEAR WARFARE CASUALTIES, CLASSIFICATION, HAZARDS, STANDARDS, BURNS, ACCELERATION, THERMAL RADIATION, STRUCTURAL PARTS (U)
IDENTIFIERS: OVERPRESSURE (U)

THE NATURE OF THE HAZARDS DUE TO THE PROMPT EFFECTS OF NUCLEAR WEAPON DETONATIONS ARE ANALYZED. HAZARDS DUE TO THERMAL RADIATION, NUCLEAR RADIATION, OVERPRESSURE, TRANSLATION, ACCELERATION, AND DEBRIS ARE CONSIDERED. A CLASSIFICATION SCHEME FOR ESTIMATING THE CASUALTIES WITHIN NFSS SHELTERS IS DEVISED. A SAMPLE NFSS SHELTER IS CLASSIFIED TO ILLUSTRATE THE APPLICATION OF THE CLASSIFICATION SCHEME. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-682 713 13/13 13/1
GENERAL AMERICAN TRANSPORTATION CORP NILES ILL GENERAL AMERICAN RESEARCH DIV
SHELTER PORTABLE VENTILATION EQUIPMENT. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
JAN 69 57P LIBOVICZ,BASIL A. ;
REPT. NO. GARD-1430

UNCLASSIFIED REPORT

DESCRIPTORS: (*FALLOUT SHELTERS, VENTILATION FANS), CIVIL DEFENSE SYSTEMS, VENTILATION DUCTS, PORTABLE, COSTS, MAN-MACHINE SYSTEMS, FANS, FEASIBILITY STUDIES, GAS FLOW, ELECTRIC MOTORS (U)
IDENTIFIERS: EVALUATION (U)

THE REPORT DESCRIBES THREE SHELTER PORTABLE VENTILATORS: A ONE-MAN PEDAL DRIVE UNIT; A FOUR-MAN PEDAL DRIVE UNIT; A 5-HORSEPOWER ELECTRIC MOTOR-DRIVEN UNIT. THESE VENTILATORS USE 36-INCH DIAMETER PROPELLER FANS. ALSO INVESTIGATED WERE THE PRESSURE LOSS CHARACTERISTICS OF 36-INCH DIAMETER COLLAPSIBLE PLASTIC DUCT TO BE USED WITH THESE VENTILATORS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-682 906 15/3
OAK RIDGE NATIONAL LAB TENN
ANNUAL PROGRESS REPORT, CIVIL DEFENSE RESEARCH PROJECT, MARCH 1967-MARCH 1968. (U)
NOV 68 426P
REPT. NO. ORNL-4284-PT-1
CONTRACT: W-7405-ENG-26

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO REPT. NO. ORNL-TM-1631 DATED MAR 66.

DESCRIPTORS: (*CIVIL DEFENSE SYSTEMS, ADVANCED PLANNING), SHELTERS, UNDERGROUND STRUCTURES, COSTS, POPULATION, BEHAVIOR, TECHNICAL INFORMATION CENTERS, BIOLOGICAL WARFARE AGENTS, DETONATION WAVES, BLAST, NUCLEAR REACTORS, ATTITUDES, STATISTICAL ANALYSIS, ECONOMICS, VULNERABILITY, FOOD (U)
IDENTIFIERS: INFORMATION CENTERS, BLAST SHELTERS, OVERPRESSURE, POSTATTACK RECOVERY, TUNNELS (U)

CONTENTS: CIVIL DEFENSE SYSTEMS ANALYSIS; CIVIL DEFENSE PROTECTIVE SYSTEMS; WEAPONS EFFECTS; SOCIAL ASPECTS OF CIVIL DEFENSE; AND POSTATTACK RECOVERY. (U)

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-683 484 5/10 15/3
AMERICAN INSTITUTES FOR RESEARCH PITTSBURGH PA
THE EFFECTS OF EXPECTATIONS ON SHELTEREE BEHAVIOR. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
DEC 68 88P SMITH,ROBERT W. ;
MEAGLEY,DONALD E. ;
REPT. NO. AIR-705-12/68-FR

UNCLASSIFIED REPORT

DESCRIPTORS: (*CONFINED ENVIRONMENTS, STRESS(PSYCHOLOGY)), (*PERFORMANCE(HUMAN), PREDICTIONS), SHELTERS, BEHAVIOR, ATTITUDES, GROUP DYNAMICS, TEST METHODS, INTERACTIONS, PSYCHOMETRICS, ADJUSTMENT(PSYCHOLOGY), ENVIRONMENT, CORRELATION TECHNIQUES, CIVIL DEFENSE SYSTEMS (U)
IDENTIFIERS: EXPECTATION, HABITABILITY (U)

THE RESEARCH PROGRAM REPORTED WAS DESIGNED TO DETERMINE HOW THE INTERACTION OF EXPECTATIONS OF SHELTER CONDITIONS WITH ACTUAL SHELTER CONDITIONS RELATES TO SHELTEREE BEHAVIOR. IT WAS HYPOTHESIZED THAT POOR SHELTEREE ADJUSTMENT MAY OFTEN BE ATTRIBUTED TO AN INDIVIDUAL'S ENCOUNTER WITH CONDITIONS MORE UNPLEASANT THAN HE EXPECTED. FOUR 24-HOUR HABITABILITY STUDIES WERE CONDUCTED, TWO WITH FEDERAL SHELTER STOCKS ('BASIC' CONDITIONS), AND TWO WITH HEAVILY 'SUPPLEMENTED' STOCKS. EACH STUDY CONTAINED A GROUP OF SUBJECTS WHO EXPECTED SUPPLEMENTED CONDITIONS, AND ANOTHER WITH BASIC EXPECTATIONS, AS MEASURED AT SHELTER ENTRY. THESE SETS OF EXPECTATIONS WERE ACHIEVED THROUGH SELECTION, AND THROUGH DIFFERENTIAL ORIENTATIONS. QUANTITATIVE COMPARISONS BETWEEN EXPERIMENTAL CONDITIONS WERE BASED ON BEHAVIOR MEASURES, AND ON ATTITUDE SCALES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-683 487 5/1 15/3
AMERICAN INSTITUTES FOR RESEARCH PITTSBURGH PA
RESEARCH PROGRAM FOR LARGE SHELTER MANAGEMENT. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
JAN 69 131P HALE,JOHN F. ;
REPT. NO. AIR-613-1/69-FR

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SPONSORED IN PART BY OFFICE OF CIVIL DEFENSE, WASHINGTON, D. C.

DESCRIPTORS: (*SHELTERS, MANAGEMENT PLANNING), CIVIL DEFENSE SYSTEMS, PSYCHOMETRICS, RESEARCH PROGRAM ADMINISTRATION, GAME THEORY, MODELS(SIMULATIONS), GROUP DYNAMICS, FEASIBILITY STUDIES, PREDICTIONS, PERFORMANCE(HUMAN), EFFECTIVENESS (U)

THE PURPOSE AND SCOPE OF THE WORK WAS TWOFOLD: (1) TO FURTHER DEVELOP AND TEST THE SHELTER MANAGEMENT CONTINGENCY GAME AS A RESEARCH DEVICE, EMPHASIZING THE REALISTIC PRESENTATION OF PROBLEMS RELATED TO THE OPERATION OF A LARGE SHELTER TO A MANAGEMENT CADRE INHABITING A SMALL PORTION OF THE SIMULATED LARGE SHELTER. (2) TO INVESTIGATE THE FEASIBILITY OF THE DEVELOPMENT OF A PREDICTIVE MODEL OF THE LARGE SHELTER. THE RESULTS INDICATE THAT THE DEVELOPMENT OF SUCH A MODEL IS FEASIBLE, AND IS USEFUL IN TERMS OF COMPILING AND ORDERING EXISTING DATA AND INDICATING WHERE FURTHER RESEARCH MAY BE DIRECTED PROFITABLY. (AUTHOR) (U)

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BNL27

AD-684 947 15/3
TECHNICAL OPERATIONS INC BURLINGTON MASS
PLANNING DOCUMENT FOR THE RADIATION TEST FACILITY OF THE PROTECTIVE STRUCTURES DEVELOPMENT CENTER. (U)
APR 63 76P BATTER,JOHN F. ;
STARBIRD,ALBERT W. ;
REPT. NO. TO-B-63-4-REV
CONTRACT: DA-18-020-ENG-1929

UNCLASSIFIED REPORT

DESCRIPTORS: (*CIVIL DEFENSE SYSTEMS, SHELTERS), (*SHELTERS, TEST FACILITIES), STRUCTURES, FEASIBILITY STUDIES, MODELS(SIMULATIONS), RADIOACTIVE FALLOUT, CIVIL DEFENSE PERSONNEL, TRAINING, TRAINING DEVICES, CALIBRATION, SITE SELECTION, INSTRUMENTATION (U)

THIS DOCUMENT IS DESIGNED TO PROVIDE THE BACKUP INFORMATION REQUIRED FOR THE SUCCESSFUL OPERATION OF THE RADIATION TEST AREA OF THE NATIONAL PROTECTIVE STRUCTURES DEVELOPMENT CENTER. AS SUCH IT IS AN ASSEMBLAGE OF THE KNOWLEDGE AND EXPERIENCE GAINED FROM FIVE YEARS OF TESTING BOTH FULL-SCALE AND MODEL STRUCTURES IN A SIMULATED FALLOUT ENVIRONMENT TOGETHER WITH GENERAL RECOMMENDATIONS FOR TEST PROCEDURES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD=685 869 15/3
RESEARCH TRIANGLE INST DURHAM N C
STATISTICAL ANALYSIS OF NFSS PROTECTION CATEGORIES. (U)
DESCRIPTIVE NOTE: FINAL REPT. AUG 66-DEC 68,
DEC 68 137P LYDAY,R. O. ;BOTKIN,G.
M. ;HILL,E. L. ;GIESBRECH",F. G. ;
REPT. NO. RTI-R-OU-295

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH STANFORD RESEARCH INST., MENLO PARK, CALIF.

DESCRIPTORS: (*NUCLEAR WARFARE, PROTECTION), (*BUILDINGS, STATISTICAL ANALYSIS), RADIOACTIVE FALLOUT, NUCLEAR RADIATION, SHELTERS, DATA, CIVIL DEFENSE SYSTEMS, PROGRAMMING(COMPUTERS) (U)
IDENTIFIERS: NFSS(NATIONAL FALLOUT SHELTER SURVEY), NATIONAL FALLOUT SHELTER SURVEY, EVALUATION (U)

THE NATIONAL FALLOUT SHELTER SURVEY (NFSS) WAS DESIGNED TO IDENTIFY FALLOUT SHELTER SPACE IN ALL BUILDINGS OTHER THAN SINGLE FAMILY DWELLINGS. BEFORE FEBRUARY 1967, PHASE 1 OF THE NFSS USED A COMPUTER PROGRAM AT THE NATIONAL BUREAU OF STANDARDS (NBS) TO OBTAIN A *FIRST ESTIMATE* OF THE PROTECTION FACTORS IN THE BUILDINGS, AND PHASE 2 WAS A FOLLOW-UP TO MORE COMPLETELY IDENTIFY AND LOCATE THE PROBABLE SHELTER AREAS IN THE BUILDINGS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO: /BML27

AD-685 870 13/13 15/3
RESEARCH TRIANGLE INST DURHAM N C OPERATIONS RESEARCH AND ECONOMICS DIV
STATISTICAL ANALYSIS OF NFSS PROTECTION CATEGORIES. SUMMARY, (U)
DEC 68 9P LYDAY,RUSSELL O., JR.; BOTKIN,G. M. ;HILL,EDWARD L. ;GIESBRECHT,F. G. ;
REPT. NO. RTI-R-OU-295-SUMMARY

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH STANFORD RESEARCH INST., MENLO PARK, CALIF. SPONSORED IN PART BY OFFICE OF CIVIL DEFENSE, WASHINGTON, D. C.

DESCRIPTORS: (*CIVIL DEFENSE SYSTEMS, SHELTERS), (*SHELTERS, STATISTICAL ANALYSIS), STRUCTURAL PROPERTIES, BUILDINGS, POPULATION, PROTECTION (U)
IDENTIFIERS: NFSS(NATIONAL FALLOUT SHELTER SURVEY), NATIONAL FALLOUT SHELTER SURVEY (U)

THE OBJECTIVE OF THE RESEARCH WAS TO DETERMINE THE RELATIONSHIP BETWEEN THE CENTER PROTECTION FACTORS OF A LARGE SAMPLE OF FACILITIES AS EVALUATED IN ACCORDANCE WITH THE ENGINEERING MANUAL AND THE CENTER PROTECTION FACTORS OF THE SAME FACILITIES AS EVALUATED IN THE NATIONAL FALLOUT SHELTER SURVEY PRIOR TO FEBRUARY 1967. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-686 303 15/3 5/10 5/11
MICHIGAN STATE UNIV EAST LANSING DEPT OF COMMUNICATION
CORRELATES OF YOUNG AMERICANS' BELIEFS AND KNOWLEDGE ABOUT CIVIL DEFENSE, (U)
OCT 68 51P GREENBERG,BRADLEY S. ;
DOMINICK,JOSEPH R. ;
REPT. NO. 2, BG-5
CONTRACT: DAHC20-67-C-0119

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-670 986.

DESCRIPTORS: (*CIVIL DEFENSE SYSTEMS, *PUBLIC OPINION), ATTITUDES, ADOLESCENTS, STUDENTS, SOCIAL COMMUNICATION, FALLOUT SHELTERS, COSTS, DECISION MAKING, MOTIVATION, QUESTIONNAIRES (U)

THIS STUDY EXAMINED CERTAIN COMMUNICATION BEHAVIORS AND ATTITUDINAL BEHAVIORS OF TEEN-AGERS AND THEIR CONCEPTIONS OF CIVIL DEFENSE AND FALLOUT SHELTERS. THREE ASPECTS OF COMMUNICATION ACTIVITY WERE EXAMINED--NUMBER OF SOURCES FOR CIVIL DEFENSE INFORMATION, COMMUNICATED INTEREST IN CIVIL DEFENSE AND KNOWLEDGE ABOUT CIVIL DEFENSE. TWO OF THE ABOVE BEHAVIORS--USING MANY SOURCES OF CD INFORMATION AND MUCH COMMUNICATED INTEREST IN CD--WERE HIGHLY INTERCORRELATED. BOTH WERE ALSO ASSOCIATED WITH MORE MASS MEDIA USE, FREQUENT FAMILY INTERACTION, AND MORE SCHOOL CD ACTIVITIES. THEY WERE ALSO ASSOCIATED WITH POSITIVE ATTITUDES TOWARD CD. KNOWLEDGE ABOUT CD COULD NOT BE WELL EXPLAINED BY THE VARIABLES IN THE PRESENT STUDY. WITH REGARD TO THE TEEN-AGERS' ATTITUDES TOWARD CIVIL DEFENSE AND FALLOUT SHELTERS, THE TWO CRITICAL ATTITUDINAL AREAS WERE THE INDIVIDUAL'S GENERAL EVALUATION OF SHELTERS AND THE ATTITUDES HE PERCEIVED HIS PARENTS TO HAVE. EACH OF THREE SPECIFIC ASPECTS OF SHELTER ATTITUDES--PROTECTION, CONDITIONS INSIDE, AND COSTS--WAS STRONGLY INTER-RELATED WITH BOTH THE TEEN-AGER'S OWN EVALUATION AND HIS PERCEPTION OF HIS PARENT'S ATTITUDES. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-687 297 15/3
PITTSBURGH UNIV PA DEPT OF SOCIOLOGY
CITIES AND CIVIL DEFENSE: AN ECOLOGICAL APPROACH TO THE ANALYSIS OF CIVIL DEFENSE DATA. (U)
DESCRIPTIVE NOTE: SUMMARY REPT.,
SEP 68 69P MYERS,HOWARD P. ;
CONTRACT: DAHC20-67-C-0122

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPORT ON AMERICANS' VIEWS ABOUT CIVIL DEFENSE ISSUES.

DESCRIPTORS: (*CIVIL DEFENSE SYSTEMS, *PUBLIC OPINION), STATISTICAL ANALYSIS, URBAN AREAS, FALLOUT SHELTERS, SURVIVAL, REACTION(PSYCHOLOGY), ECOLOGY, ATTITUDES, POPULATION (U)

IN A STUDY IN WHICH ECOLOGICAL AND CIVIL DEFENSE VARIABLES ARE CROSS-TABULATED, IT IS FOUND THAT POPULATIONS OF CITIES THAT ARE RELATIVELY UNSTABLE, MOBILE, AND IMMATURE ARE LIKELY TO DISPLAY A POTENTIAL FOR CIVIL DEFENSE ACTION. FAVORABLE EVALUATION OF FALLOUT SHELTERS IN PARTICULAR AND CIVIL DEFENSE IN GENERAL, PERCEPTION OF LOCAL DANGER AND CHANCES OF SURVIVAL, AND A MARKED LEANING TOWARD CIVIL DEFENSE WHEN RELATED ISSUES IN THE BROADER CONTEXT OF NATIONAL AND INTERNATIONAL AFFAIRS ARE CONSIDERED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-687 381 15/3 5/11
PITTSBURGH UNIV PA DEPT OF SOCIOLOGY
CIVIL DEFENSE FAVORABILITY. A CRITICAL ANALYSIS. (U)
DESCRIPTIVE NOTE: SUMMARY REPT.,
JUL 68 46P MYERS,HOWARD P. ;
CONTRACT: DAHC20-67-C-0122, NSF-G11309

UNCLASSIFIED REPORT

DESCRIPTORS: (*CIVIL DEFENSE SYSTEMS, *PUBLIC OPINION), STATISTICAL ANALYSIS, PROTECTION, NUCLEAR EXPLOSIONS, FALLOUT SHELTERS, SOCIOLOGY, ATTITUDES (U)

BY LOCATING PEOPLE IN TERMS OF A DISTINCTION BETWEEN CIVIL DEFENSE FAVORABILITY AS A SOCIAL PRESCRIPTION AND CIVIL DEFENSE FAVORABILITY AS A SOCIAL ISSUE, IT WAS POSSIBLE TO SPECIFY TENDENCIES IN TERMS OF THE VARIABLES THAT WERE THE FOCI OF THIS ANALYSIS. HIGHLY INFORMED PEOPLE WHO DISAGREED THAT THE POWERS OF THE FEDERAL GOVERNMENT ARE EXCESSIVE SHOWED TENDENCIES TO OBSERVE SOCIAL PRESCRIPTIONS (TOOK PROTECTIVE STEPS IN THE CASE OF NUCLEAR ATTACK) AND TO SUPPORT SOCIAL ISSUES (FAVORED THE BUILDING OF FALLOUT SHELTERS). LOWLY INFORMED PEOPLE WHO AGREED THAT THE POWERS ARE EXCESSIVE SHOWED JUST THE OPPOSITE TENDENCIES. PEOPLE WHO WERE HIGHLY INFORMED BUT WHO AGREED AND PEOPLE WHO WERE LOWLY INFORMED BUT WHO DISAGREED SHOWED MIXED TENDENCIES. FOR THE LATTER, SUPPORT FOR SHELTER BUILDING WAS LARGELY A CONVENTIONALIZED RESPONSE. FOR THE FORMER, OPPOSITION WAS NOT A REFLECTION OF DEFIANCE TOWARDS A PARTICULAR SOCIAL INSTITUTION. IT WAS THE ARTICULATION OF A POSITION IN WHICH A CERTAIN CONTROVERSY WAS PERCEIVED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-687 704 15/3 13/2 13/13
NAVAL CIVIL ENGINEERING LAB PORT HUENEME CALIF
NUCLEAR BLAST RESISTANT WATER WELLS. (U)
DESCRIPTIVE NOTE: TECHNICAL REPT. JUL 65-JUN 68,
MAY 69 55P NORBUTAS,J. A. ;
REPT. NO. NCEL-TR-624
PROJ: Y-F011-05-02-353

UNCLASSIFIED REPORT

DESCRIPTORS: (*NUCLEAR EXPLOSIONS, SHELTERS), (*WATER WELLS, SHELTERS), (*SHELTERS, COOLING), DESIGN, HARDENING, CIVIL DEFENSE SYSTEMS, SURVIVAL, SHOCK WAVES, GELS (U)
IDENTIFIERS: COLLECTIVE PROTECTION, OVERPRESSURE (U)

A PROPOSED CONCEPT AND ASSOCIATED DESIGN CRITERIA FOR BLAST-RESISTANT WATER WELLS ARE PRESENTED. EMPHASIS IS ON THE DESIGN OF DEEP WELLS FOR THE COOLING OF HARDENED SHELTERS. THE SCOPE OF THE STUDY IS LIMITED TO BLAST OVERPRESSURES UNDER 300 PSI AND WEAPON YIELDS LESS THAN 20 MT. A UNIQUE FEATURE OF THE CONCEPT IS THE USE OF A GEL-LIKE MATERIAL TO ISOLATE THE WELL CASING FROM BLAST-INDUCED GROUND MOTIONS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-686 099 5/10 15/3 13/13
GEORGIA UNIV ATHENS CIVIL DEFENSE RESEARCH
SHELTER OCCUPANCY STUDIES AT THE UNIVERSITY OF
GEORGIA. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
DEC 68 328P HAMMES,JOHN A. ;
AHEARN,THOMAS R. ;FOUGHNER,JAMES W. ;
BEUSSEE,MAY P. ;BRAUN,MARY E. ;
CONTRACT: DAHC20-68-C-0114
PROJ: AF-1500
TASK: 1520

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO APPENDICES, AD-688
100.

DESCRIPTORS: (*CIVIL DEFENSE SYSTEMS, FALLOUT
SHELTERS), (*FALLOUT SHELTERS, *SOCIAL
PSYCHOLOGY), CIVIL DEFENSE PERSONNEL, TRAINING,
WATER SUPPLIES, MEDICAL EXAMINATION, SANITARY
ENGINEERING, FOOD, FIRE SAFETY, CHILDREN, TEST
METHODS (U)
IDENTIFIERS: *HABITABILITY (U)

THE CIVIL DEFENSE RESEARCH STAFF OF THE
UNIVERSITY OF GEORGIA CONDUCTED TWELVE SIMULATED
COMMUNITY SHELTER OCCUPANCY TESTS DURING THE PERIOD
1962-67. THE PRESENT REPORT IS A SYNTHESIS OF
FINDINGS OF THE LARGE-GROUP STUDIES, RANGING IN
NUMBERS OF PARTICIPANTS FROM 160-1,000 PERSONS, AND
INVOLVING MEN, WOMEN, AND CHILDREN CONFINED FOR
PERIODS VARYING FROM ONE DAY TO ONE WEEK.
IMPLICATIONS FOR THE NATIONAL SHELTER PROGRAM
ARE DISCUSSED, AS WELL AS RECOMMENDATIONS FOR FUTURE
RESEARCH. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-688 100 5/10 15/3 13/13
GEORGIA UNIV ATHENS CIVIL DEFENSE RESEARCH:
SHELTER OCCUPANCY STUDIES AT THE UNIVERSITY OF
GEORGIA. APPENDICES. (U)
DESCRIPTIVE NOTE: FINAL REPT.
DEC 68 115P
CONTRACT: DAHC20-68-C-0114
PROJ: AF-1500

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: APPENDICES TO AD-688 099.

DESCRIPTORS: (*CIVIL DEFENSE SYSTEMS, FALLOUT SHELTERS), (*FALLOUT SHELTERS, SOCIAL PSYCHOLOGY), CIVIL DEFENSE PERSONNEL, TRAINING, MANAGEMENT ENGINEERING, LOGISTICS, TEST METHODS, REACTION(PSYCHOLOGY), STATISTICAL DATA (U)
IDENTIFIERS: *HABITABILITY (U)

CONTENTS. SHELTER MANAGEMENT; SHELTER *HANDBOOK* FOR UNTRAINED MANAGEMENT; SHELTEREE REACTIONS; SHELTER SUPPLIES. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-688 186 13/13 15/3
URS SYSTEMS CORP BURLINGAME CALIF
AN EXPLORATORY STUDY TO ASSESS THE MAGNITUDE OF OCD FOUNDATION PROBLEMS. (U)
DESCRIPTIVE NOTE: FINAL SUMMARY REPT.,
NOV 68 128P MASON,H. ;WALTER,D. ;
REPT. NO. URS-693-3

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH STANFORD RESEARCH INST., MENLO PARK, CALIF.

DESCRIPTORS: (*CIVIL DEFENSE SYSTEMS, URBAN AREAS), (*FOUNDATIONS(STRUCTURES), REVIEWS), (*NUCLEAR EXPLOSIONS, FOUNDATIONS(STRUCTURES)), SOILS, MOTION, SHOCK WAVES, EARTHQUAKES, BLAST, PRESSURE, INTENSITY, RESPONSE, BUILDINGS, FAILURE(MECHANICS), DESIGN, FALLOUT SHELTERS (U)
IDENTIFIERS: OVERPRESSURE, SOIL LIQUEFACTION, GROUND MOTION (U)

THE OBJECTIVE OF THE STUDY WAS TO EXAMINE AVAILABLE DATA ON SOIL RESPONSE UNDER EXPLOSIVE LOADING OVERPRESSURES IN THE RANGE OF INTEREST TO THE OFFICE OF CIVIL DEFENSE AND TO APPLY THIS INFORMATION TO THE FOUNDATION CONDITIONS AT SOME AMERICAN CITIES. SEVERAL PROBLEM AREAS WERE IDENTIFIED WHICH HAVE NOT PREVIOUSLY BEEN CONSIDERED. THESE INCLUDE MUCH LARGER GROUND MOTIONS THAN PREVIOUSLY PREDICTED WHEN THE EXPLOSION TAKES PLACE IN WATER OR SATURATED SOIL AND THE POSSIBILITY OF FOUNDATION FAILURES DUE TO LIQUEFACTION OF THE SUPPORTING SUBSOIL. AN EXAMINATION OF THE GENERAL FOUNDATION CONDITIONS OF SIX AMERICAN CITIES IN LIGHT OF THESE FINDINGS SHOWED THAT MANY FOUNDATION PROBLEMS EXIST WHICH MUST BE TAKEN INTO ACCOUNT IN ANY SHELTER DESIGN OR EVALUATION PROGRAM. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-688 929 18/6 11/4 13/13 15/3

ILLINOIS UNIV URBANA

EXPERIMENTAL DETERMINATION OF THE GAMMA-RAY SHIELDING CHARACTERISTICS OF A RIBBED SLAB. (U)

APR 69 72P GREEN,D. W. ;PREISS,K. ; CHILTON,S. P. ;CHILTON,A. B. ;

REPT. NO. NRS--9

CONTRACT: N00228-66-C-0311

MONITOR: USNRDL TRC-69-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPORT ON NUCLEAR RADIATION SHIELDING STUDIES.

DESCRIPTORS: (*CIVIL DEFENSE SYSTEMS, SHELTERS), (*GAMMA RAYS, SHIELDING), (*SHIELDING, CONCRETE), STRUCTURAL PARTS, EFFECTIVENESS, ATTENUATION, EXPERIMENTAL DATA (U)

IDENTIFIERS: CONCRETE SLABS (U)

EXPERIMENTS WERE CARRIED OUT TO MEASURE THE SHIELDING EFFECTIVENESS OF CONCRETE SLABS, BOTH RIBBED AND EQUIVALENT SMEARED CONFIGURATIONS, FOR BROAD PARALLEL BEAMS OF ESSENTIALLY MONOENERGETIC RADIATION. THE BROAD-BEAM SOURCE CONFIGURATION WAS SIMULATED BY MEANS OF A MOVABLE SOURCE OF COBALT-60 RADIATION COLLIMATED TO A THIN BEAM, AND BY USE OF A LINE DETECTOR. ANGLES OF INCIDENCE OF 0 DEGREES (NORMAL), 45 DEGREES, AND 60 DEGREES WERE INVESTIGATED. RESULTS WERE COMPARED WITH PREVIOUS MONTE CARLO CALCULATIONS AND SHOWN TO BE CONSISTENT WITH THEM, PROVIDED CERTAIN FACTORS, SUCH AS THE ANGULAR SPREAD OF THE COLLIMATED BEAM, WERE TAKEN INTO ACCOUNT. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-688 958 13/13 15/3 5/3
STANFORD RESEARCH INST MENLO PARK CALIF
PARAMETRIC STUDY OF SHELTER SYSTEM COSTS. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
JAN 69 293P LOGOTHETTI,T. J. ;GOEN,R.
L. ;RYAN,J. W. ;KAMRADT,C. A. ;WIEHLE,C.
K. ;
CONTRACT; DAHC20-67-C-0116
PROJ: SRI-MU-6250-010

UNCLASSIFIED REPORT

DESCRIPTORS: (*NUCLEAR EXPLOSIONS, BLAST), (*SHELTERS, COSTS), STRUCTURES, DESIGN, SELECTION, REINFORCED CONCRETE, PROTECTION, HARDNESS, CONSTRUCTION MATERIALS, UNDERGROUND STRUCTURES, PERFORMANCE(ENGINEERING), SPECIFICATIONS, CONFIGURATION, VENTILATION, CONTROLLED ATMOSPHERES, STRUCTURAL PARTS, CIVIL DEFENSE SYSTEMS (U)
IDENTIFIERS: OVERPRESSURE (U)

CURRENT RESEARCH DATA ON BLAST SHELTERS ARE REVIEWED IN THE FIVE AREAS OF STRUCTURE, EARTHWORK, ENTRANCEWAYS, ENVIRONMENTAL CONTROL SYSTEMS, AND SUPPLIES. THE RESULTS OF THESE REVIEWS, PRESENTING COST AND PERFORMANCE DATA IN GRAPHS AND TABLES, ARE INCORPORATED INTO COST FUNCTIONS DEVELOPED TO EVALUATE PRELIMINARY DESIGN CONCEPTS FOR A VARIETY OF BLAST SHELTER SIZES, SHAPES, SPACE UTILIZATION CONCEPTS, AND HARDNESS RATINGS. PREFERRED SHELTER CONFIGURATIONS ARE SELECTED USING CRITERIA OF COSTS PER UNIT FLOOR AREA AND PER OCCUPANT. QUESTIONABLE COST ASSUMPTIONS AND PERFORMANCE SPECIFICATIONS ARE IDENTIFIED AS AREAS FOR FURTHER RESEARCH. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-690 209 6/8 15/3
STANFORD RESEARCH INST MENLO PARK CALIF
STORAGE STABILITY OF CIVIL DEFENSE SHELTER RATIONS. (U)
DESCRIPTIVE NOTE: ANNUAL REPT. NO. 7, 1 JUL 68-30 JUN 69,
JUN 69 77P CECIL,SAM R. ;
CONTRACT: DAHC20-67-C-0136

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH GEORGIA EXPERIMENT STATION, REPT. NO. 153-VII-GES, PROJ. NO. UGA-ST-1-53. SEE ALSO ANNUAL REPT. NO. 6, AD-673 817.

DESCRIPTORS: (*FALLOUT SHELTERS, SURVIVAL KITS), (*FOOD, STORAGE), PACKING(MATERIALS), CEREALS, CARBOHYDRATES, TIME, MOISTURE, TEMPERATURE CONTROL, CONTAINERS, STABILITY, CIVIL DEFENSE SYSTEMS, LEAKAGE(FLUID), CORROSION, DEGRADATION, RUPTURE, COLORS, PH, ODORS, (U)
IDENTIFIERS: *SHELTER RATIONS, FLAVORS (U)

RESULTS ARE REPORTED ON THE STABILITY OF 6 LOTS OF FALLOUT SHELTER CEREAL RATIONS AND 3 LOTS OF CARBOHYDRATE SUPPLEMENT STORED 6 AND 5 YEARS, RESPECTIVELY, AT SPECIFIED TEMPERATURES AND RELATIVE HUMIDITIES. CEREAL RATIONS INCLUDE 2 LOTS EACH OF SURVIVAL CRACKERS, BISCUITS, AND BULGUR WHEAT WAFERS. DATA INCLUDE (1) BURSTING STRENGTH, MOISTURE CONTENT, AND GENERAL CONDITION OF V3C FIBERBOARD CASES; (2) RESIDUAL OXYGEN, LEAKING AND CONDITION OF SEAMS, CORROSION, AND COATING DEFECTS OF 2 1/2-GALLON AND 5-GALLON METAL CANS; (3) BREAKAGE OF PACKAGE SEALS, SEAMS OR MATERIALS, AND OF PRODUCT UNITS; (4) FRACTURE STRENGTH AND RANCIDITY VALUES OF CEREAL ITEMS, (5) PH AND SUGAR CONTENTS OF SUPPLEMENT ITEMS, AND (6) MOISTURE CONTENT, COLOR, SENSORY QUALITY, AND HEDONIC RATINGS OF ALL ITEMS. (AUHTOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-690 251 15/3
RESEARCH TRIANGLE INST DURHAM N C
A RESOURCE ALLOCATION MODEL FOR SHELTER SYSTEMS ANALYSIS. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
MAY 69 26P WRIGHT,JAMES C. ;
REPT. NO. RTI-R-OU-230-1
CONTRACT: OCD-PS-64-56
PROJ: RTI-OU-230-1

UNCLASSIFIED REPORT

DESCRIPTORS: (*FALLOUT SHELTERS, *COST EFFECTIVENESS), CIVIL DEFENSE SYSTEMS, PROGRAMMING(COMPUTERS), MATHEMATICAL PREDICTION, MODELS(SIMULATIONS), STATISTICAL ANALYSIS, ENVIRONMENT, BLAST, NUCLEAR RADIATION, PROBABILITY, VULNERABILITY, MICHIGAN (U)
IDENTIFIERS: ATTACK ENVIRONMENTS, DETROIT(MICHIGAN) (U)

ONE OF THE PRIMARY OBJECTIVES OF SHELTER RESEARCH IN CIVIL DEFENSE IS TO ASSESS THE COST-EFFECTIVENESS AND FEASIBILITY OF ALTERNATIVE SHELTER SYSTEMS. IN ORDER TO BETTER DIRECT THE SUBORDINATE RESEARCH TASKS AND THUS IMPROVE THE INPUTS TO THE TOTAL CD SYSTEMS ANALYSIS, THE BUDGET ALLOCATION MODEL (BAM), A PROCEDURE FOR STUDYING RESOURCE ALLOCATION AND FOR EVALUATING THE COST-EFFECTIVENESS OF ALTERNATIVE SHELTER SYSTEMS WAS DEVELOPED. BAM DETERMINES AN OPTIMUM MIX OF ADDITIONAL SHELTERS WITHIN A VARIETY OF CONSTRAINTS WHICH INCLUDE THE BUDGET, ATTACK ENVIRONMENT, SHELTER VULNERABILITY AND COST, AND POPULATION DISTRIBUTION TO IMPROVE AN EXISTING SHELTER POSTURE. THE REPORT DESCRIBES THE OPERATION OF BAM AND EMPHASIZES THE IMPROVEMENTS ADDED TO THE MODEL TO EXPAND THE TYPES OF RESOURCE ALLOCATION STUDIES THAT MAY BE PERFORMED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-691 454 6/18 13/13
RADIATION RESEARCH ASSOCIATES INC FORT WORTH TEX
MONTE CARLO STUDY OF INTERIOR PARTITION EFFECTS ON FALLOUT SHIELDING. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
JAN 69 66P PRICE,J. H. ;FRENCH,R.
L. ;
REPT. NO. RRA-T91
CONTRACT: N00228-68-C-1770
PROJ: OCD-111211
MONITOR: USNRDL TRC-69-5

UNCLASSIFIED REPORT

DESCRIPTORS: (*RADIOACTIVE FALLOUT, SHELTERS), (*SHELTERS, PROTECTION), NUCLEAR RADIATION, MONTE CARLO METHOD, CONCRETE, THICKNESS, CORRELATION TECHNIQUES, ENGINEERING, CIVIL DEFENSE SYSTEMS, NUCLEAR EXPLOSIONS, GAMMA RAYS (U)
IDENTIFIERS: *RADIATION SHIELDING, *PROTECTION FACTORS, COLLECTIVE PROTECTION, *FALLOUT SHIELDING (U)

PROTECTION FACTORS WERE CALCULATED BY MONTE CARLO FOR CYLINDRICAL BARRIERS WITH A CONCENTRIC INTERIOR PARTITION. THE BARRIER THICKNESSES WERE 20, 40, AND 80 PSF AND THE PARTITION THICKNESSES WERE 20 AND 40 PSF. THE RADIUS OF THE BARRIER WAS 10.0 FT AND THE INTERIOR PARTITION HAD RADII OF 2.5, 5.0, AND 10.0 FT. THE CYLINDRICAL CONCRETE BARRIERS WERE INFINITE IN HEIGHT. THE ENGINEERING METHOD WAS ALSO USED TO CALCULATE PROTECTION FACTORS FOR THE CYLINDRICAL BARRIERS, AND THE RESULTS WERE COMPARED WITH THE MONTE CARLO DATA. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-692 312 13/13 15/6 18/8
STANFORD RESEARCH INST MENLO PARK CALIF
FEASIBILITY STUDY OF SLANTING FOR COMBINED NUCLEAR WEAPONS EFFECTS. (U)
DESCRIPTIVE NOTE: TECHNICAL REPT.,
JUN 69 313P MURPHY,H. L. ;
CONTRACT: DAHC20-67-C-0136
PROJ: SRI-MU-6300-500

UNCLASSIFIED REPORT

DESCRIPTORS: (*CIVIL DEFENSE SYSTEMS, SHELTERS), (*SHELTERS, DESIGN), EXPLOSION EFFECTS, OPTIMIZATION, COSTS, COST EFFECTIVENESS, CONSTRUCTION MATERIALS, RADIOACTIVE FALLOUT, FALLOUT SHELTERS, BEAMS(STRUCTURAL), WALLS, DOORS, FOUNDATIONS(STRUCTURES), FIRE SAFETY, BLAST, COOLING + VENTILATING EQUIPMENT, TOLERANCES(PHYSIOLOGY), CONSTRUCTION, FEASIBILITY STUDIES (U)
IDENTIFIERS: *COMBINED NUCLEAR EFFECTS SLANTING, *FALLOUT SLANTING, *NUCLEAR WEAPONS EFFECTS (U)

THE REPORT IS IN A FORMAT SUITABLE FOR A PROTOTYPE GUIDE FOR ARCHITECTS AND ENGINEERS USE IN SLANTING NEW BUILDING DESIGNS TOWARD BASEMENT CONSTRUCTION OF SHELTERS AGAINST 5 PSI (FREE FIELD) NUCLEAR BLAST OVERPRESSURE AND ASSOCIATED WEAPONS EFFECTS. THIS REPORT, HOWEVER, COVERS ONLY THE FIRST STAGE OF THE GUIDE'S PREPARATION, INCLUDING THREE CASE STUDIES. ALL WERE FOR CLOSED RATHER THAN OPEN SHELTER, THE OBJECTIVE BEING TO PROVIDE THE PRESCRIBED PROTECTION LEVEL AT AN ADDITIONAL CONSTRUCTION COST OF NO MORE THAN $6/SF OF SHELTER SPACE. THE COST LIMITATION WAS APPROXIMATELY MET IN THE THIRD CASE STUDY, USING A FULL BASEMENT, BUT COULD NOT BE MET IN THE FIRST TWO CASE STUDIES, USING PARTIAL BASEMENTS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-692 505 13/13 15/3 18/6
FLOW CORP WATERTOWN MASS NUCLEAR DIV
INTERIOR PARTITION AND BASEMENT SHELTER
EXPERIMENTS. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
APR 69 74P STARBIRD,A. W. ;
REPT. NO. CONESCO-4903
CONTRACT: N00228-67-C-2958
MONITOR: USNRDL TRC-69-24

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: DETACHABLE SUMMARY SHEET INSERTED.

DESCRIPTORS: (*NUCLEAR EXPLOSIONS, RADIOACTIVE FALLOUT), (*SHELTERS, *SHIELDING), CONCRETE, THICKNESS, MODEL TESTS, RADIOACTIVE ISOTOPES, RADIATION MONITORS, SAFETY, CIVIL DEFENSE SYSTEMS (U)
IDENTIFIERS: FALLOUT SHIELDING, RADIATION SHIELDING (U)

A SERIES OF INTERIOR PARTITION AND BASEMENT SHELTER EXPERIMENTS HAVE BEEN PERFORMED, EMPHASIZING BELOW GROUND DETECTOR POSITIONS. MEASUREMENTS WERE MADE ON ELEVEN STRUCTURE COMBINATIONS USING CO-60 SOURCES AT GROUND LEVEL TO SIMULATE 'FALLOUT' CONTAMINATION. TEST STRUCTURES CONSISTED OF 6-FOOT ID EXTERIOR AND 3-FOOT ID INTERIOR CONCRETE WALLS, IN CONJUNCTION WITH CORRESPONDING 6 AND 3 FOOT DIAMETER HORIZONTAL MEMBERS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-692 816 13/13 18/3
AMERICAN INST FOR RESEARCH SAN MATEO CALIF
OPERATIONAL CAPABILITIES OF COMMUNITY FALLOUT SHELTER SYSTEMS. A WORKBOOK FOR USE BY LOCAL CIVIL DEFENSE OFFICIALS. (U)
APR 63 426P WILLIS,MARY B. ;
REPT. NO. AIR-C98-4/63-RP WORKBOOK
CONTRACT: OCD-OS-62-170

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-692 817, AD-692 818, AND AD-692 819.

DESCRIPTORS: (*CIVIL DEFENSE SYSTEMS, *FALLOUT SHELTERS), DESIGN, MAINTENANCE, WARNING SYSTEMS, RADIOACTIVE FALLOUT, MONITORS, CONTROLLED ATMOSPHERES, FOOD, SANITARY ENGINEERING, MEDICAL SUPPLIES, COMMUNICATION SYSTEMS, TRAINING, CONTROL SYSTEMS, FIRE SAFETY, INSTRUCTION MANUALS (U)
IDENTIFIERS: COLLECTIVE PROTECTION, RADIATION SHIELDING, COMMUNITY FALLOUT SHELTER SYSTEMS, EVALUATION (U)

THE DOCUMENT IS A WORKING DRAFT REPRESENTING A PROPOSED APPROACH AND PROVIDING GUIDANCE IN THE DEVELOPMENT OF COMMUNITY SHELTER SYSTEMS. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-692 817 13/13 18/3
AMERICAN INST FOR RESEARCH SAN MATEO CALIF
OPERATIONAL CAPABILITIES OF COMMUNITY FALLOUT SHELTER SYSTEMS. INSTRUCTION MANUAL FOR EVALUATION INSTRUMENT. (U)
APR 63 13P SHONTZ,WILLIAM D. ;
REPT. NO. AIR-C98-4/63-RP INSTRUCTION
CONTRACT: OCD-OS-62-170

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-692 816, AD-692 818, AND AD-692 819.

DESCRIPTORS: (*CIVIL DEFENSE SYSTEMS, *FALLOUT SHELTERS), DESIGN, MAINTENANCE, WARNING SYSTEMS, RADIOACTIVE FALLOUT, MONITORS, CONTROLLED ATMOSPHERES, FOOD, SANITARY ENGINEERING, MEDICAL SUPPLIES, COMMUNICATION SYSTEMS, TRAINING, CONTROL SYSTEMS, FIRE SAFETY, INSTRUCTION MANUALS (U)
IDENTIFIERS: COLLECTIVE PROTECTION, RADIATION SHIELDING, COMMUNITY FALLOUT SHELTER SYSTEMS, EVALUATION (U)

THE REPORT CONTAINS 487 PLAN FACTORS WHICH HAVE BEEN IDENTIFIED AS BEING OF VARYING DEGREES OF IMPORTANCE TO THE OPERATIONAL CAPABILITY OF A COMMUNITY FALLOUT SHELTER SYSTEM. THESE FACTORS ARE ORGANIZED INTO 33 SUBJECT-MATTER CATEGORIES. THE CATEGORIES ARE: PLAN/COMMUNITY COMPATIBILITY, POPULATION INDOCTRINATION AND TRAINING, SHELTER ASSIGNMENTS, SHELTER MANAGEMENT (PRE-EMERGENCY), SHELTER STOCKING, SHELTER DESIGN, SHELTER UTILIZATION PLAN, PERIODIC MAINTENANCE, POST-SHELTER PLANNING (PRE-EMERGENCY), WARNING SYSTEM, INGRESS, RADIOLOGICAL DEFENSE, SHELTER MANAGEMENT (IN-SHELTER), ATMOSPHERE CONTROL, WATER, FOOD, SLEEP, SANITATION, MEDICAL, SPACE-VOLUME REQUIREMENTS, LIGHTING, POWER SUPPLY, CONTINGENCY PLANNING, COMMUNICATION, AND CONTROL. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-692 818 13/13 18/3
AMERICAN INST FOR RESEARCH SAN MATEO CALIF
OPERATIONAL CAPABILITIES OF COMMUNITY FALLOUT SHELTER SYSTEMS. EVALUATION INSTRUMENT, (U)
APR 63 64P SHONTZ,WILLIAM D. ;
WILLIS,MARY B. ;ANGELL,DAVID ;
REPT. NO. AIR-C98-4/63-RP-EVALUATION
CONTRACT: OCD-OS-62-170

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-692 816, AD-692 817, AND AD-692 819.

DESCRIPTORS: (*NUCLEAR EXPLOSIONS, FALLOUT SHELTERS), (*CIVIL DEFENSE SYSTEMS, *FALLOUT SHELTERS), REVIEWS, DESIGN, MAINTENANCE, WARNING SYSTEMS, RADIOACTIVE FALLOUT, MONITORS, CONTROLLED ATMOSPHERES, FOOD, SANITARY ENGINEERING, MEDICAL SUPPLIES, COMMUNICATION SYSTEMS, TRAINING, CONTROL SYSTEMS, FIRE SAFETY, QUESTIONNAIRES, INSTRUCTION MANUALS (U)
IDENTIFIERS: COLLECTIVE PROTECTION, RADIATION SHIELDING, COMMUNITY FALLOUT SHELTER SYSTEMS, EVALUATION (U)

THE REPORT PRESENTS MATERIAL IN THE CIVIL DEFENSE LITERATURE REGARDING OPERATIONAL CAPABILITIES OF COMMUNITY FALLOUT SHELTER SYSTEMS. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-692 819 13/13 18/3
AMERICAN INST FOR RESEARCH SAN MATEO CALIF
OPERATIONAL CAPABILITIES OF COMMUNITY FALLOUT SHELTER SYSTEMS. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
APR 63 66P SHONTZ,WILLIAM D. ;
REPT. NO. AIR-C98-4/63-FR
CONTRACT: OCD-OS-62-170

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-692 816, AD-692 817, AND AD-692 818.

DESCRIPTORS: (*CIVIL DEFENSE SYSTEMS, *FALLOUT SHELTERS), OPERATION, MAINTENANCE, STRUCTURAL PROPERTIES, REVIEWS, INSTRUCTION MANUALS (U)
IDENTIFIERS: COLLECTIVE PROTECTION, RADIATION SHIELDING, COMMUNITY FALLOUT SHELTER SYSTEMS, EVALUATION (U)

THE PRIMARY PURPOSE OF THE STUDY WAS TO DEVELOP AN EVALUATION INSTRUMENT WHICH COULD BE USED TO ASSESS THE OPERATIONAL CAPABILITIES OF COMMUNITY FALLOUT SHELTER SYSTEMS. A SECONDARY PURPOSE WAS TO TRANSLATE THE BASIC DATA USED IN CONSTRUCTING THE EVALUATION INTO GUIDANCE MATERIAL USEFUL TO LOCAL CIVIL DEFENSE PLANNERS. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-696 135 15/3
URS RESEARCH CO BURLINGAME CALIF
CIVIL DEFENSE OPERATIONAL CONCEPTS, (U)
MAY 69 120P MILLER,CARL F. ;
REPT. NO. URS-757-1
CONTRACT: DAHC20-69-C-0142
PROJ: OCD-3119A

UNCLASSIFIED REPORT

DESCRIPTORS: (*CIVIL DEFENSE SYSTEMS, *MANAGEMENT PLANNING), (*NUCLEAR WARFARE, PASSIVE DEFENSE), NUCLEAR EXPLOSIONS, SYSTEMS ENGINEERING, HAZARDS, SHELTERS, RADIOACTIVE FALLOUT, DAMAGE ASSESSMENT, SURVIVAL, RADIATION EFFECTS, MORTALITY RATES, CASUALTIES, DEBRIS, FIRES, BLAST, VEHICLES (U)
IDENTIFIERS: *OPERATIONAL CONCEPTS (U)

RELATIONSHIPS AMONG NUCLEAR WEAPONS EFFECTS AND CIVIL DEFENSE OPERATIONAL SYSTEM VARIABLES ARE SUMMARIZED AND USED AS A BASIS FOR DERIVING CIVIL DEFENSE OPERATIONAL CONCEPTS, CLASSIFICATION OF HAZARD CONDITIONS, AND SYSTEMS OF STANDARD OPERATION ROUTINES, CENTERED ON PROTECTIVE SHELTER AND ON OPERATIONS FROM THE SHELTER, NINE GENERAL CLASSES OF BASIC HAZARD CONDITIONS (BHC) FOR WHICH DIFFERENT OPTIONS OF STANDARD OPERATING ROUTINES (SOR'S) WOULD BE REQUIRED ARE SUGGESTED. THE NINE CLASSES ARE COMBINATIONS OF THREE POSSIBLE LEVELS OF FALLOUT HAZARDS AND THREE POSSIBLE LEVELS OF PHYSICAL DAMAGE FOR AN AREA. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-696 461 13/1 13/13 15/3
STANFORD RESEARCH INST MENLO PARK CALIF
SHELTER CONFIGURATION: ENVIRONMENTAL CONTROL SYSTEMS AND RELATED PARAMETERS. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
MAR 69 115P ALLEN,FRANK C. ;
CONTRACT: DAHC20-68-C-0155
PROJ: OCD-1236A, SRI-MU-7327
TASK: 1230

UNCLASSIFIED REPORT

DESCRIPTORS: (*NUCLEAR EXPLOSIONS, SHELTERS), (*SHELTERS, *CONTROLLED ATMOSPHERES), COST EFFECTIVENESS, CONFIGURATION, VENTILATION, UNDERGROUND STRUCTURES, COOLING, PIPES, HEAT TRANSFER, CARBON DIOXIDE, MOISTURE, AIR, CIVIL DEFENSE SYSTEMS (U)
IDENTIFIERS: OVERPRESSURE (U)

THE INVESTIGATION IS PRELIMINARY TO STUDIES CONCERNED WITH (1) SEPARATE AND COMBINED EFFECTS OF ALL FACTORS THAT SIGNIFICANTLY AFFECT COSTS AND PERFORMANCE OF ENVIRONMENTAL CONTROL SYSTEMS FOR SHELTERS AND (2) RECIPROCAL EFFECTS OF STRUCTURE AND SYSTEM CONFIGURATION ON OVERALL COST-EFFECTIVENESS. REPRESENTATIVE CONFIGURATIONS ARE OUTLINED FOR SHELTERS TO BE USED AS MODELS IN SUBSEQUENT STUDIES, WHICH ARE ORIENTED TOWARD UNDERGROUND SHELTERS THAT WOULD PROVIDE PROTECTION FROM WEAPONS EFFECTS IN THE 10-20 PSI OVERPRESSURE RANGE. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-698 486 10/2 15/6
URS RESEARCH CO BURLINGAME CALIF
AVAILABILITY AND USE OF EMERGENCY POWER SOURCES IN THE EARLY POSTATTACK PERIOD. (U)
DESCRIPTIVE NOTE: FINAL REPT.,
AUG 69 128P FOGET,CARL R. IVAN
HORN,WILLIAM H. I
REPT. NO. URS-710-4
CONTRACT: DAHC20-69-C-0111
PROJ: OCD-3311B

UNCLASSIFIED REPORT

DESCRIPTORS: (*NUCLEAR WARFARE, POWER SUPPLIES), (*POWER SUPPLIES, SURVIVAL), (*FALLOUT SHELTERS, POWER SUPPLIES), AUXILIARY POWER PLANTS, GENERATORS, POWER PLANTS(ESTABLISHMENTS), STATISTICAL ANALYSIS, URBAN AREAS, CIVIL DEFENSE SYSTEMS, COST EFFECTIVENESS, ENGINES + OTORS, SCHEDULING (U)
IDENTIFIERS: *POST ATTACK RECOVERY, *EMERGENCY POWER SOURCES, ELECTRIC POWER DEMAND (U)

THE STUDY FOR THE OFFICE OF CIVIL DEFENSE CONCERNS THE IDENTIFICATION AND USE OF EMERGENCY POWER SOURCES BOTH CONVENTIONAL AND UNCONVENTIONAL IN THE EARLY POSTATTACK PERIOD. THE DEMAND FOR EMERGENCY POWER DURING THE EARLY POSTATTACK PERIOD WAS CHARACTERIZED AS WAS VARIOUS CANDIDATE EMERGENCY POWER SOURCES, A COMPARISON OF THE TWO WERE MADE AND THE FEASIBLE EMERGENCY POWER SOURCES WERE SELECTED FOR FURTHER STUDY. AN INVENTORY OF THE EMERGENCY POWER SOURCES IN THE COUNTRY WAS PERFORMED AND METHODS OF UTILIZING THE POWER SOURCES WERE DELINEATED. A STATISTICAL STUDY OF THE DEMAND AND RESPONSE CAPABILITY FOR EMERGENCY POWER WAS MADE USING SYNTHESIZED 'TYPICAL' CITIES. CASE STUDIES OF TWO REAL CITIES WERE PERFORMED TO DETERMINE ACTUAL DEMAND AND RESPONSE CAPABILITIES FOR EMERGENCY POWER AND THEN COMPARED WITH THE RESULTS OF THE TYPICAL CITY ANALYSIS. THE COST AND BENEFITS OF EMERGENCY POWER AS RELATED TO CIVIL DEFENSE EFFORT WERE DISCUSSED. (AUTHOR) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML27

AD-812 154 13/13 6/21
NAVAL CIVIL ENGINEERING LAB PORT HUENEME CALIF
SHIELDING CONSIDERATIONS IN THE DESIGN OF HARDENED STRUCTURES. (U)
DESCRIPTIVE NOTE: FINAL REPT. FEB 66-FEB 67,
MAR 67 17P HUDDLESTON,CHARLES M. ;
DOTY,DUANE R. ;
REPT. NO. NCEL-TN-882
PROJ: Y-F011-05-02-358

UNCLASSIFIED REPORT

DESCRIPTORS: (*FALLOUT SHELTERS, SHIELDING), NUCLEAR WEAPONS, BLAST, COUNTERMEASURES, DESIGN, CONCRETE, PENETRATION, FAST NEUTRONS, RADIOACTIVE FALLOUT, LETHAL DOSAGE, MATHEMATICAL ANALYSIS, CIVIL DEFENSE SYSTEMS (U)

AN EVALUATION HAS BEEN MADE OF SOME OF THE FACTORS TO BE CONSIDERED IN THE DESIGN OF HARDENED STRUCTURES. IN PARTICULAR, RADIATION SHIELDING REQUIREMENTS HAVE BEEN SPECIFIED FOR VARIOUS WEAPON SIZES, DISTANCES FROM IMPACT POINT, AND BLAST OVERPRESSURE. IT HAS BEEN SHOWN THAT AN ENVELOPE OF CURVES CAN BE CONSTRUCTED TO ALLOW THE SPECIFICATION OF SHIELDING CRITERIA TO INSURE THAT RADIATION PROTECTION IS COMMENSURATE WITH THE SURVIVABILITY OF A STRUCTURE FROM BLAST EFFECTS. ALSO, A MATHEMATICAL ANALYSIS IS GIVEN OF THE RELATIONSHIP BETWEEN PROTECTION FACTORS AND PERCENT LETHALITIES DUE TO FALLOUT RADIATION. THE RESULTS DESCRIBED IN THIS NOTE SHOULD BE DIRECTLY APPLICABLE TO THE PROMULGATION OF DESIGN CRITERIA FOR RADIATION SHIELDING. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /BML2

AD-843 583 18/8 13/13 15/3 18/3
NAVAL CIVIL ENGINEERING LAB PORT HUENEME CALIF
NUCLEAR RADIATION SHIELDING IN THE DESIGN OF HARDENED STRUCTURES. (U)
DESCRIPTIVE NOTE: TECHNICAL REPT.,
OCT 68 24P HUDDLESTON,C. M. !DOTY,D. R. !INGOLD,W. C. !
REPT. NO. NCEL-TR-599
PROJ: Y-F011-05-02-358

UNCLASSIFIED REPORT

DESCRIPTORS: (*CIVIL DEFENSE SYSTEMS, SHELTERS), (*SHELTERS, NUCLEAR RADIATION), (*NUCLEAR RADIATION, SHIELDING), HANDBOOKS, RADIATION EFFECTS, MATHEMATICAL MODELS, NUCLEAR WARFARE, HARDENING, ATTENUATION, DESIGN, STATISTICAL ANALYSIS, THERMAL RADIATION, BLAST, DOSAGE, DUCTS, DOORS, RADIOACTIVE FALLOUT, SURVIVAL (U)
IDENTIFIERS: YIELD(NUCLEAR EXPLOSIONS), OVERPRESSURE (U)

THE TRANSMITTED DOSE OF INITIAL RADIATION IS RELATED TO PEAK OVERPRESSURE, WEAPON YIELD, AND SHIELD THICKNESS. IT IS SHOWN THAT THE MINIMUM EXPECTED WEAPON SIZE DETERMINES THE THICKNESS OF THE RADIATION SHIELD FOR SPECIFIC OVERPRESSURE. A SIMPLIFIED METHOD IS PRESENTED FOR DETERMINING THE PROTECTION FACTOR FOR TWO-LEGGED DUCTS. THE DESIGNER CAN USE EITHER GRAPHICAL METHODS OR A NOMOGRAM. A MATHEMATICAL ANALYSIS IS INCLUDED THAT RELATES PROTECTION FACTORS TO PERCENT LETHALITIES DUE TO FALLOUT RADIATION. (AUTHOR) (U)

*AMERICAN HYDROMATH CO NEW YORK

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C93 9 63TR
PLANNING GUIDES FOR DUAL-PURPOSE SHELTERS.
AD-412 342

*AMERICAN INST FOR RESEARCH PITTSBURGH PA

• • •

PLANNING AND ORGANIZING SHELTER NON-OPERATIONAL ACTIVITY PROGRAMS.
AD-410 891

• • •

OCCUPANCY EXERCISE RESEARCH GUIDE: AN INTRODUCTION TO THE RESEARCH USE OF THE SHELTER EXERCISE FOR TRAINING.
AD-409 480

• • •

AIR C99 9 63TR
GUIDE TO SHELTER ORGANIZATION AND MANAGEMENT.
AD-420 442

*AMERICAN INST FOR RESEARCH SAN MATEO CALIF

• • •

AIR-C98-4/63-FR
OPERATIONAL CAPABILITIES OF COMMUNITY FALLOUT SHELTER SYSTEMS.
AD-692 819

• • •

AIR-C98-4/63-RP-EVALUATION
OPERATIONAL CAPABILITIES OF COMMUNITY FALLOUT SHELTER SYSTEMS. EVALUATION INSTRUMENT.
AD-692 818

• • •

AIR-C98-4/63-RP INSTRUCTION
OPERATIONAL CAPABILITIES OF COMMUNITY FALLOUT SHELTER SYSTEMS. INSTRUCTION MANUAL FOR EVALUATION INSTRUMENT.
AD-692 817

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AIR-C98-4/63-RP HANDBOOK
OPERATIONAL CAPABILITIES OF COMMUNITY FALLOUT SHELTER SYSTEMS. A HANDBOOK FOR USE BY LOCAL CIVIL DEFENSE OFFICIALS.
AD-692 816

*AMERICAN INSTITUTES FOR RESEARCH PITTSBURGH PA

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AIR-613-1/69-FR
RESEARCH PROGRAM FOR LARGE SHELTER MANAGEMENT.
AD-683 487

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AIR-705-12/68-FR
THE EFFECTS OF EXPECTATIONS ON SHELTEREE BEHAVIOR.
AD-683 486

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AIR-D93E-4/68-FR
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